

**Calendar No. 302**

107TH CONGRESS }  
*1st Session* }

SENATE

{ REPORT  
107-131

FEDERAL REFORMULATED FUELS ACT  
OF 2001

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REPORT

OF THE

COMMITTEE ON  
ENVIRONMENT AND PUBLIC WORKS  
UNITED STATES SENATE

TO ACCOMPANY

S. 950

TOGETHER WITH  
MINORITY VIEWS



DECEMBER 20 (legislative day, DECEMBER 18), 2001.—Ordered to be  
printed.

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### FEDERAL REFORMULATED FUELS ACT OF 2001

DECEMBER 20 (legislative day, DECEMBER 18), 2001.—Ordered to be printed

Mr. JEFFORDS, from the Committee on Environment and Public Works, submitted the following

### REPORT

[To accompany S. 950]

together with

### MINORITY VIEWS

The Committee on Environment and Public Works, to which was referred the bill (S. 950) to amend the Clean Air Act to address problems concerning methyl tertiary butyl ether, and for other purposes, having considered the same, reports favorably thereon with amendments and recommends that the bill, as amended, do pass.

### GENERAL STATEMENT

The Reformulated Gasoline (RFG) program of the Clean Air Act (CAA), added to the law in 1990, required the use of oxygen-laden additives, called oxygenates, in RFG in nonattainment areas. To comply with this requirement, refiners have relied heavily on methyl tertiary butyl ether (MTBE). MTBE has also been used as an additive in conventional gasoline at lower concentrations since 1979.

MTBE was detected in groundwater in a number of locations as early as the mid-1980's. This contamination was believed to be a minor, manageable problem until 1995. That year, MTBE contamination in Santa Monica, California led to the closure of wells producing more than half of that city's daily water supply. Since that time, MTBE has been the focus of numerous State and Federal efforts to ban its use. Appendix I provides a list of Federal and State legislative activities regarding MTBE. Due to the fact that MTBE is used to satisfy a particular requirement in the CAA, eliminating its use in gasoline will lead to related consequences for the environ-

ment, human health, the supply and cost of fuel, and the future of the industries involved in the manufacture and supply of oxygenates. Elements of this legislation relate to each of these consequences.

## BACKGROUND

### *The Federal Reformulated Gasoline Program*

The Clean Air Act Amendments of 1990 (CAAA) established the RFG program as a measure to reduce the growing impact of mobile source emissions on air quality in urban areas. The program requires gasoline in the nine nonattainment areas<sup>1</sup> with the highest ozone concentrations and populations over 250,000, to meet criteria that are stricter than standards for conventional gasoline. In June 1996, one additional area<sup>2</sup> was required to use RFG after being redesignated from serious to severe. Authority was given for other nonattainment areas to opt-in to the RFG program at the discretion of the Governor of a State.<sup>3</sup>

Areas that opted in to the RFG program prior to January 1, 2000, are required to use RFG until January 1, 2003. The extent of the opt-in authority recently has been challenged and explicitly limited by the DC Circuit Court of Appeals.<sup>4</sup> This legislation expands State authority to opt-in to the RFG program beyond the limits the Court found in existing law. Areas now using RFG represent approximately 30 percent of U.S. gasoline consumption.

The program set a variety of content and performance requirements, including a minimum content requirement for oxygen and maximum allowable benzene and heavy metal quantities in RFG. Through regulatory authority provided by the Act, EPA chose, in 1993, to adopt performance standards for toxic air pollutants and volatile organic compounds (VOCs) rather than the prescriptive fuels formula allowed under Section 211(k)(3)(A). These performance standards required a 15 percent reduction in toxic air pollutants from baseline vehicles<sup>5</sup> starting in 1995 and maintained through 1999, and required a 22 percent reduction from baseline vehicles beginning in 2000, as part of Phase II. Phase II also requires reductions in NOx and VOCs.

Motor vehicle emissions of carbon monoxide, volatile organic compounds, and, most notably, toxics have been reduced drastically in RFG areas. RFG use has allowed areas to exceed the statutory requirements to reduce toxic emissions, including emissions of ben-

<sup>1</sup> Los Angeles, California; San Diego, California; Hartford, Connecticut; New York, New York; Philadelphia, Pennsylvania; Chicago, Illinois; Baltimore, Maryland; Houston, Texas; and Milwaukee, Wisconsin. (See Appendix II).

<sup>2</sup> Sacramento, California.

<sup>3</sup> States that opted-in areas to the RFG program include Arizona, Connecticut (entire State), Delaware (entire State), District of Columbia, Kentucky, Maine, Maryland, Massachusetts (entire State), Missouri, New Hampshire, New Jersey (entire State), New York, Pennsylvania, Rhode Island (entire State), Texas, Virginia. The Governors of Arizona, Maine, New York and Pennsylvania subsequently opted-out certain opt-in areas. See Appendix II for a complete list of RFG areas.

<sup>4</sup> *American Petroleum Institute v. Environmental Protection Agency*, 198 F. 3d 275 (DC Cir. 2000). The Court agreed with API, saying that Congress did not grant EPA the authority to interpret the opt-in provisions in Section 211(k)(6) of the Clean Air Act so as to allow areas that are not classified or are in attainment to adopt the Federal RFG program via application by a Governor. Only areas that are designated nonattainment for one of the specified classes of nonattainment (marginal, moderate, serious, extreme, and severe) are presently allowed to implement an RFG program.

<sup>5</sup> Baseline vehicles and fuel technology assumptions in EPA's complex model date from 1990, despite significant advances in vehicle and fuel systems technology.

zene. This over-compliance is largely due to the dilution of the blendstock gasoline when the relatively toxic-free oxygenates, ethanol and MTBE, are added. (Although substantially toxic-free, MTBE is listed in Section 112 of the Clean Air Act Amendments of 1990 (CAAA) as a hazardous air pollutant due to its adverse effects on human health when inhaled.) Recent data suggest that refiners have achieved a 27 percent or higher reduction in toxic air pollutants in RFG areas (where MTBE was used) from the 1990 baseline. A 1998 study by the Northeast States for Coordinated Air Use Management (NESCAUM) concluded that Phase II RFG would reduce the public cancer risk by 20 percent.

On March 29, 2001, EPA released a final strategy<sup>6</sup> to further reduce air toxics emissions from motor fuels as an effort to comply with its responsibility under Section 202(l) of the Act to establish additional standards for fuels or vehicles to control hazardous air pollutant emissions. The strategy identified 21 mobile source air toxics (MSATs). It is intended to ensure that refiners continue over-compliance with RFG and anti-dumping requirements by maintaining their average 1998–2000 toxic emissions performance levels for RFG and conventional gasoline. The MSAT rule commits EPA to revisiting additional fuel and vehicle MSATs controls in a 2004 rulemaking. The MSAT rule is intended to ensure that toxics overcompliance is maintained regardless of whether any oxygenates are used. The deadline in the CAAA for issuance of these regulations was June 1995.

The final MSATs rule has been challenged by a number of parties. On May 24, 2001, the States of New York and Connecticut and the Sierra Club, Earth Justice, the Natural Resources Defense Council and the U.S. Public Interest Research Group filed suit against EPA, charging that the MSATs rule fails to achieve the pollution reductions mandated by the Clean Air Act. Other parties, including Amerada Hess, Hovensa LLC, and International Truck and Engine Corporation have filed petitions in the United States Court of Appeals challenging EPA's final rule on the grounds that it is inconsistent with section 202(l) of the Act, that EPA acted arbitrarily and capriciously in promulgating the rule and did not adequately follow required notice and comment rulemaking procedures.

There is no specific deadline in the Act for EPA to further reduce toxic air pollutants from mobile sources. The Agency retains general authority to control emissions from motor vehicles of any air pollutant that causes or contributes to air pollution which may reasonably be anticipated to endanger public health or welfare. In a discussion focused on maintaining air toxics reductions from the RFG program, EPA's Blue Ribbon Panel on Oxygenates in Gasoline specifically recommended that EPA should explore and implement mechanisms to achieve equivalent or improved public results that focus on reducing those compounds that pose the greatest risk.<sup>7</sup>

The Panel recognized that the current mass-based performance requirements in the RFG program may not adequately account for and consider that the different exhaust components pose differen-

<sup>6</sup>Federal Register Vol. 66, No. 61 pages 17229–17273, March 29, 2001

<sup>7</sup>U.S. EPA. "Achieving Clean Air and Clean Water: The Report of the Blue Ribbon Panel on Oxygenates in Gasoline" (EPA420-R-99-021) Washington, DC: GPO, 1999.

tial levels of risk to public health due in large part to their variable potency.

While the RFG program is considered a general success, experts acknowledge that there is some uncertainty in estimating the actual quantity of mobile source emissions. It is difficult to verify the emission reductions associated with the RFG program as distinct from other mobile source emission reduction programs. In May 2000, the National Research Council recommended that EPA make a number of improvements to the Mobile Source Emissions Factor model (MOBILE), including estimation of off-road vehicle emissions and incorporation of both mobile source toxic emissions and high-emitting vehicles.<sup>8</sup> More regular revisions and updating of this model is important for air quality planners. S. 950 requires the EPA to expedite resolution of the current complex model which generates important fuels-related emissions information and provides input for the MOBILE model so that vehicle manufacturers, fuel makers, air quality planners, and Congress have accurate information.

#### *Oxygenates*

The CAAA required that 2 percent by weight of RFG be oxygen. This requirement was not included in the Senate Environment and Public Works Committee's reported version of S. 1630, the Clean Air Act Amendments of 1989. It was added on the Senate floor after vigorous debate and was the only successful floor amendment. Proponents of that requirement had expected ethanol to be the oxygenate of choice for fuel providers. It was not regarded as a mandate to use ethanol, however, even by its sponsors. During floor debate on the measure, Senator Daschle, a co-sponsor of the amendment, stated that the oxygen standard was fuel neutral. (Congressional Record, March 29, 1989, page S3513) Most refiners, blenders, and importers opted to use a cheaper and more easily used oxygenate, MTBE, in many nonattainment areas. MTBE currently is used in approximately 80 percent of RFG, while ethanol is used in slightly less than 20 percent of that fuel.

In late 1993, EPA issued final regulations implementing the RFG program. In 1994, EPA issued another set of final rules that revised the RFG program. The revisions included a requirement that renewable oxygenates be used to meet 30 percent of the 2 percent oxygen content requirement in RFG. The 1994 rules were challenged by the American Petroleum Institute and the National Petroleum Refiners Association. The DC Circuit Court of Appeals decided that EPA lacked the authority to impose the renewable requirement and vacated the 1994 rulemaking.<sup>9</sup>

The principle benefits of oxygenates are the reduction of carbon monoxide emissions through more complete fuel combustion and the reduction of toxic air pollution. The oxygen content requirement formally took effect in 1995 and is currently satisfied by refiner use of either MTBE or ethanol. Today, approximately four billion gallons of MTBE and 380 million gallons of ethanol (EtOH) are consumed to meet this requirement. Most of the ethanol is produced

<sup>8</sup>National Research Council. "Modeling Mobile-Source Emissions." Washington, DC: National Academy Press, May 2000.

<sup>9</sup>American Petroleum Institute v. Environmental Protection Agency, 52 F. 3d 1113 (DC Cir. 1995).

and consumed in the Midwest region of the country, while MTBE use is concentrated in the Northeastern States, Texas, and California. Approximately 3.5 percent of ethanol and 30 percent of MTBE is imported. In addition to use in the RFG program, ethanol and MTBE are used to help reduce emissions in carbon monoxide (CO) nonattainment areas as part of the wintertime oxygenated fuels program, which began in 1992. Originally, 40 CO nonattainment areas were required to participate in this winter fuel program. Today 15 areas in ten States participate. Approximately 46 million gallons of MTBE and 240 million gallons of ethanol are used each year to satisfy the oxygenate requirement of this program.

Section 211(k)(2)(B) of the CAA provides EPA the authority to waive the oxygen content requirement for RFG, in whole or in part, for an ozone nonattainment area upon the determination by the Administrator that compliance with the requirement would prevent or interfere with the attainment of a National Ambient Air Quality Standard (NAAQS). On April 12, 1999, California submitted to EPA a petition requesting such a waiver. The waiver request letter from Governor Gray Davis is attached in Appendix III. In June 2001, EPA denied California's request. A copy of the denial letter is attached in Appendix IV. In providing the States with access to this waiver authority on the condition of meeting a relatively stringent test, and under EPA's authority under Section 211(c)(4), Congress sought to balance the desire for uniformity in our nation's fuel supply with the obligation to empower States to adopt measures necessary to meet national air quality standards.

The State of New Hampshire is seeking to opt out of the entire RFG program. The State opted in to the program its four ozone nonattainment areas<sup>10</sup> under Section 211(k)(2)(B) in 1991. In May 2001, the State filed with EPA a petition to opt out of the Federal RFG program. The letter and the petition are attached in Appendix V.

#### *Methyl Tertiary Butyl Ether and Water Quality*

MTBE has been used nationwide at low levels in gasoline since 1979 to replace lead as an octane booster, or as an anti-knocking agent. It is a fuel additive containing oxygen manufactured from natural gas or petroleum sources. The use of MTBE greatly expanded due to the oxygen content requirement of the RFG program described above. Demand driven by the RFG program caused MTBE's share of the total national gasoline supply to grow from 1 percent in 1990 to the current 3 percent level. Most of that increase has been concentrated in the nonattainment areas of the Northeastern States, Texas, and California.

The success of the RFG program has been overshadowed in recent years by the discovery of MTBE in drinking water supplies. When leaked or spilled into the environment, MTBE can cause serious drinking water quality problems. MTBE moves quickly through ground and water without significant biodegradation or natural attenuation. Once in underground water supplies, MTBE can be detected by smell and taste at extremely low concentrations. Small amounts of MTBE can render water supplies undrinkable,

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<sup>10</sup> Rockingham, Hillsborough, Merrimack, and Strafford counties.

but the precise human health effects of MTBE consumption at very low levels are unknown. In 1997, the EPA issued a drinking water advisory that recommends an aesthetic limit of 20 to 40 parts per billion (ppb) and a health limit of 70 ppb. Many States have also established drinking water standards for MTBE, some of which are more stringent than EPA's advisory. A list of State standards is attached in Appendix VI.

Currently, there are no comprehensive nationwide data on the extent of MTBE contamination. A few targeted studies have been conducted. In 2000, the U.S. Geological Survey completed a study that estimates up to 20 percent of the nation's drinking water supplies are at risk due to their proximity to underground fuel storage tanks. In 1998, Maine conducted a State-wide sampling that found 16 percent of tested wells contained some level of MTBE.

The major sources of MTBE contamination are leaking underground storage tanks. Many underground storage tanks have been or are currently being upgraded or replaced per a recent deadline under a long-standing EPA regulation. Questions remain, however, regarding the ability of refiners, distributors, and manufacturers of MTBE to ensure that fuel storage systems are completely sealed from the environment. Other sources of MTBE contamination are automobile and tanker truck accidents, leaks from above ground tanks, leaks from pipelines, two-stroke water craft engine releases, storm water runoff, fueling over-fills, and residential releases.

The EPA Blue Ribbon Panel recommended a suite of Federal, State, and local actions that could expedite remediation of MTBE contamination and protect water supplies from additional and future contamination. Cleanup is possible, but difficult and expensive. Contaminated water may be filtered, aerated, or bioremediated. MTBE may be pumped and treated or remediated in situ. All options require installation and use of special equipment as well as on-going operation and maintenance. States and communities are seeking financial assistance for the cleanup of MTBE. Existing Federal and State programs are not fully funded.

Many States have enacted or are considering legislation to address MTBE contamination. Appendix I provides a complete list of all such State legislative activities. Legislation has been enacted to ban MTBE in several States including Arizona, California, Colorado, Connecticut, Illinois, Kansas, Michigan, Minnesota, Nebraska, New Jersey, New York, South Dakota, and Washington. EPA has started action to phase down or eliminate MTBE under the Toxic Substances Control Act, but this action could take years to complete. Both State and Federal efforts to ban MTBE continue to face questions regarding the limits of existing authority to ban a substance that is not yet proven to be hazardous to human health at anticipated levels of exposure.

The CAA allows neither EPA nor the States to prohibit a fuel or fuel additive unless ". . . any emission product of such fuel or fuel additive causes, or contributes, to air pollution which may reasonably be anticipated to endanger the public health or welfare." (Section 211(c)(1)) MTBE, as part of the RFG program, has provided air quality benefits, but its role in contaminating water is the main problem that argues in favor of a ban of MTBE use in gasoline.

*Ethanol*

Ethanol is used as an oxygenate in the RFG program and as an octane enhancer in conventional gasoline. Some of the physical and chemical properties of ethanol affect how it is used as a gasoline additive. The volatility of gasoline increases when blended with ethanol. Consequently, gasoline blendstocks that are prepared for blending with ethanol must undergo additional refinement to reduce volatility and comply with evaporative performance standards. Manufacturing such sub-RVP blendstock adds to the refiners' costs of production.

Ethanol also is soluble in water. Since water is suspended in gasoline and is present in pipelines and storage tanks along the gasoline distribution system, ethanol blended with gasoline can lead to pools of ethanol and water separating from the gasoline. As a result, ethanol is blended at terminals and refinery racks as close as possible to the point of retail sale where it is delivered by truck. Often this involves filling a truck with gasoline and ethanol from separate tanks. The two fuels are then splash-blended by the motion of the truck as the truck drives to its destination. These factors create a need for additional infrastructure to distribute and blend ethanol into gasoline.

Ethanol consumption, as part of the nation's total motor vehicle fuel use, is expected to increase as MTBE is banned by States and as a result of enactment of this legislation. This increase will, in turn, affect the nation's fuel supply and distribution system, air quality, and water quality. The Administrator and the States will have to monitor carefully and, as appropriate, deal with these consequences using both existing authorities and those established in this legislation to prevent economic and environmental harm.

Ethanol can contribute to both increases and decreases of emissions of air pollutants. The increased volatility of ethanol blends of gasoline can lead to greater emissions of volatile organic compounds that contribute to smog formation. It can also play a role in ozone formation in warm-weather conditions. On the other hand, ethanol is effective at reducing carbon monoxide emissions. Carbon monoxide is a pollutant more common in cold-weather conditions and regulated because of its adverse health effects.

Adding ethanol to gasoline displaces benzene and other aromatics and can result in a reduction in emissions of those toxic compounds. Exhaust emissions of acetaldehyde, however, can increase by as much as 100 percent when ethanol is blended at 5 percent volume of gasoline. Ethanol blends typically contain 10 percent ethanol as a result of tax incentives. Acetaldehyde is classified as a probable human carcinogen. It can undergo photochemical reactions in the atmosphere to form peroxyacetyl nitrate (PAN). PAN is a respiratory irritant and has been shown to be mutagenic in cellular research. Further study is needed to confirm or refute that emissions of these substances pose significant health risks.

Ethanol biodegrades more easily than other components of gasoline. Some laboratory data and modeling have indicated that this property can result in extending the plume of benzene, toluene, and xylene (BTEX) in leaks or spills of gasoline containing ethanol. The BTEX plume will likely not begin to biodegrade until the ethanol is depleted, if the ethanol continues to consume all the oxygen available for biodegradation until it is completely broken down.

This allows more time for the BTEX plume to migrate in either soil or groundwater.

#### CHRONOLOGY

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November 1990 .....	President George Bush signs S. 1630, the Clean Air Act Amendments of 1990. Public Law 101 549 added the RFG program to the CAA and includes the 2 percent oxygen requirement.
December 1993 .....	EPA promulgates final regulations to implement the RFG program.
June 1994 .....	EPA promulgates regulations to require 30 percent of the oxygen requirement in the RFG program be renewable oxygenates. The rule is challenged in the DC Circuit Court of Appeals and vacated by the Court in April 1995.
December 1994 .....	RFG is first sold.
May 1995 .....	United States Geological Survey reports detections of MTBE in groundwater in Denver, Colorado.
February 1996 .....	MTBE is detected in water supplies in Santa Monica, California. Seven of 11 municipal drinking water wells are closed, eliminating more than half of the city's daily water production. Contamination levels range from 610 ppb to 230,000 ppb.
January 1997 .....	Monitoring program of water reservoirs begins in Southern California and leads to detections of MTBE concentrations as high as 29 ppb during the summer boating months.
December 1997 .....	U.S. EPA publishes a Drinking Water Advisory for MTBE that recommends an aesthetic limit of 20 to 40 ppb and a health limit of 70 ppb.
Spring 1998 .....	Maine experiences three incidents of small gasoline spills that contaminate water supplies. In Standish, an automobile accident is linked to contamination of 24 private wells (10 contained MTBE levels in excess of 100 ppb). In Whitefield, a gasoline spill is the likely source of contamination of a well supplying water to a public elementary school with MTBE levels of 800 ppb. In Windham, surface spills and fuel over-fills at a convenience store, with up-dated double-walled tanks, contaminate nearby wells.
October 1998 .....	Maine's request to opt-out of the RFG program is granted in Federal Register notice.
March 1999 .....	California Governor Gray Davis issues Executive Order D-5-99 calling for a phase-out of MTBE use in California by December 2002.
April 1999 .....	California Governor Gray Davis sends letter to EPA requesting a waiver from the oxygen mandate by making the claim that compliance with the oxygenated fuel mandate contributes to air pollution and hampers the State's efforts to attain the NAAQS for ozone.
September 1999 .....	EPA's Blue Ribbon Panel on Oxygenates in Gasoline issues its final report. Among its recommendations are the elimination of the 2 percent oxygen mandate, maintenance of toxic emission reductions achieved by the oxygen mandate, expansion available resources for treatment of water contaminated by MTBE, and a substantial reduction in the use of MTBE.
March 2000 .....	Clinton Administration issues principles for elimination or phase down of MTBE use in fuels nationwide and increased use of renewable fuels. EPA initiates efforts to phase down or eliminate MTBE use under the Toxic Substances Control Act.
May 2000 .....	Article is published in Environmental Science and Technology—the U.S. Geological Survey determined that 9000 wells in 31 surveyed States are at risk of gasoline contamination due to proximity to leaking underground storage tanks. Sampling was not done to determine actual MTBE contamination.
May 2000 .....	New York Governor George Pataki signs legislation banning the use of MTBE in gasoline in New York within 3 years.
September 2000 .....	The Senate Environment and Public Works Committee reports S. 2962, the Federal Reformulated Fuels Act of 2000. Report 106-426.
March 2001 .....	U.S. EPA promulgates final regulation on Control of Emissions of Hazardous Air Pollutants from Mobile Sources, referred to as the MSAT rule.
May 2001 .....	New Hampshire submits to U.S. EPA a request to opt-out of the RFG program.
June 2001 .....	EPA issues denial of the request by California Governor Davis for a waiver of the oxygen mandate made in April 1999.

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#### OBJECTIVES OF THE LEGISLATION

The Federal Reformulated Fuels Act, S. 950, is intended to address existing and potential MTBE contamination in the most cost-effective manner.

In order to accomplish this objective, S.950 achieves the following items:

- Authorizes \$200 million from the Leaking Underground Storage Tank (LUST) Trust Fund for State grants to clean up MTBE

and other ether gasoline additives. Also authorizes an additional \$200 million from the LUST Trust Fund for State and Federal activities to prevent releases and increase compliance under the UST program.

- Requires EPA to ban the use of MTBE within 4 years of enactment.
- Expands existing EPA authority to allow for regulation of fuel additives for protection of water quality (current law only allows for regulation to protect air quality).
- Allows governors to waive oxygen mandate within 90 days of enactment.
- Establishes anti-backsliding provisions by setting toxics emissions performance standards on a regional basis.
- Instructs EPA to require fuel producers to conduct tests on a regular basis to determine the health and environmental effects of new fuels and fuel additives.
- Requires EPA to study the health and environmental impacts of using other ethers as a substitute for MTBE.
- Requires EPA to release a draft fuel study within 4 years of enactment. The study must contain an analysis of the changes in emissions of air pollutants and changes in overall air quality due to the use of fuels and fuel additives resulting from this bill. The final study must be published not later than 5 years from enactment.
- Eliminates the existing waiver of the Reid Vapor Pressure limitation for ethanol fuel blends.
- Allows Governors to opt-in both classified and non-classified areas to the RFG program.
- Authorizes a total of \$750 million over three fiscal years for grants to merchant MTBE producers for assisting in the conversion to production of other fuel additives.

#### SECTION-BY-SECTION ANALYSIS

##### *Section 1. Short Title*

The bill is entitled “The Federal Reformulated Fuels Act.”

##### *Section 2. Leaking Underground Storage Tanks*

#### SUMMARY

The bill authorizes appropriations not to exceed \$200 million from the Leaking Underground Storage Tank (LUST) Trust Fund to be used for cleanup and treatment of MTBE. The bill authorizes an additional \$200 million over 6 years from the LUST Trust Fund for EPA and States to conduct inspections, issue orders, and bring actions under Subtitle I of the Solid Waste Disposal Act.

#### DISCUSSION

In 1984, Congress enacted, as Subtitle I of the Solid Waste Disposal Act, a comprehensive program to address the problem of leaking underground storage tanks. Among other things, the program required EPA to develop leak detection and prevention standards for underground storage tanks (USTs). It authorized the Agency to compel tank owners and operators either to take corrective action to clean up leaking tanks and comply with standards for USTs or

to close the tanks. States have largely taken the lead in implementing and enforcing the program requirements, including corrective action requirements.

States receive Federal funds from the LUST Trust Fund. Revenue for this Fund comes from a one-tenth of one cent tax on all petroleum products. This tax generates approximately \$170 million per year. The interest on the principal in the fund generates approximately \$70 million annually (roughly the amount of annual appropriations from the LUST Trust Fund).

Amounts are appropriated each year from the Trust Fund for the States and EPA to implement and enforce the UST corrective action requirements; to conduct cleanups in certain limited situations where there is no financially viable responsible party or where a responsible party fails to undertake the appropriate corrective action; to take corrective action in cases of emergency; and to bring cost recovery actions against parties to seek reimbursement of costs expended from the Fund to clean up sites. The balance of the Trust Fund is approximately \$1.3 billion. The annual appropriation from the Trust Fund for fiscal year 2001 was approximately \$72 million. Congress has appropriated approximately \$10 million per year from general revenues for State implementation of leak prevention and detection programs.

In addition to the Federal LUST Trust Fund, many States have also established funds, capitalized through State gas taxes, fees, and other mechanisms, to pay for cleanups and to provide assistance to tank owners in complying with other requirements. States spend approximately \$1 billion per year from their trust funds. In recent years, however, the claims against those funds have risen dramatically.

More than a million leaking USTs have been closed under this program, EPA estimates that over 740,000 active USTs contain petroleum products. Some of these tanks have leaks, causing potential harm to human health and the environment. A number of recent, high profile contamination cases have highlighted this problem. MTBE has been detected at thousands of leaking UST sites. In some cases, drinking water wells have been closed due to these releases of MTBE. According to EPA, States have reported more than 400,000 confirmed releases from USTs. Cleanups have been initiated for approximately 357,000 releases and almost 242,000 cleanups have been completed. In spite of this progress, many thousands of cleanups remain to be completed. EPA, States, and the private sector have suggested that lack of resources, both for cleanup and for inspections and enforcement, have limited efforts to fully address MTBE contamination and leaking USTs. Section 2 of this bill addresses these concerns.

Section 2(a) reconfirms the authority of the Administrator and the States to use funds from the LUST Trust Fund for the cleanup of sites contaminated by MTBE from leaking USTs. In addition, Section 2(a) authorizes the Administrator and the States to conduct such cleanup activities using specifically designated funds made available under new Section 9011(a) from the LUST Trust Fund. In order to undertake a corrective action under this subsection, the Administrator or a State must still comply with the requirements of Section 9003(h)(2) of the Solid Waste Disposal Act. States are to

exercise this authority in accordance with their cooperative agreements.

Relatively low levels of MTBE can be detected in groundwater. The detection of MTBE, by taste and smell, can make the water unpalatable, but not necessarily harmful. This section amends Section 9003 of the Solid Waste Disposal Act to clarify that the Administrator and the States may undertake corrective actions whenever the presence of MTBE in groundwater presents a threat to public welfare, even in situations where the level of MTBE is not so high as to present a threat to human health.

Section 2(b) amends Subtitle I of the Solid Waste Disposal Act by creating a new Section 9010 giving States greater flexibility in their use of LUST funds. New Section 9010 authorizes EPA and the States to use funds appropriated from the LUST Trust Fund to conduct inspections, issue orders, or bring actions under Subtitle I. Funding authorized under this section is for both formal enforcement actions, such as judicial actions and administrative orders, and related measures to secure compliance, such as notices of violation or warnings. This increased funding for inspections and enforcement related activities will enable States and EPA to secure greater compliance with UST standards. Increased compliance will avoid future releases and resulting cleanup costs. Funds authorized under this provision may be used for cost recovery.

This section does not change current law on State authority under authorized programs or Federal authority to enforce the requirements of Subtitle I. Nor does this provision affect EPA's authority to use other funds to enforce the UST program. EPA receives funding from sources other than the LUST Trust Fund to undertake inspection and enforcement related activities for leak detection and other preventive requirements. Any LUST Trust Fund appropriations used for such enforcement activities by EPA are expected to supplement funds that the Agency has been receiving, and will continue to receive, from sources other than the LUST Trust Fund.

In addition to authorizing funding for States and EPA for federally authorized programs, this section authorizes States to use funds to undertake inspection and enforcement related actions for State tank leak detection, prevention, and other requirements through State programs with requirements that are similar or identical to Subtitle I. State agencies currently receive funding from EPA from sources other than the LUST Trust Fund to undertake such activities for leak detection and other preventive requirements. It is expected that States will continue to receive funding from EPA from these other sources, as well as from the LUST Trust Fund, for these activities. Any LUST Trust Fund appropriations used for enforcement related activities by States should supplement funds that the States have been receiving, and will continue to receive, through grants authorized under Section 2007(f).

Section 2(b) also creates a new Section 9011 to increase the levels of authorized funding for measures related to corrective actions and enforcement. This section authorizes appropriations for two major and equally important activities—funding an immediate need to address MTBE, which is currently coming from leaking underground tanks and is creating problems in numerous drinking water wells, and facilitating inspection and enforcement activities

to avoid similar problems being created in the future. Section 9011(1) authorizes a one-time appropriation of \$200 million for corrective actions with respect to MTBE. The bill authorizes substantial funding to clean up MTBE contamination in recognition of the fact that this problem has arisen, in part, as a result of increased use of MTBE by refiners in an effort to meet Federal oxygenate requirements. Section 9011(2) authorizes an additional \$200 million over the period between fiscal years 2002 through 2007 to conduct inspections or issue orders or bring actions under Subtitle I. There is broad consensus that more resources are needed to conduct inspections to ensure that underground tanks comply with applicable regulations and to ensure early detection of leaks and other problems. EPA has estimated that it would cost approximately \$93 million over what is currently appropriated for the first year, and \$70 million each year thereafter, to inspect facilities on an annual basis. A biannual inspection schedule would cost approximately \$63 million over what is currently appropriated for the first 2 years combined, and \$20 million additional annually thereafter.

*Section 3. Authority for Water Quality Protection From Fuels*

SUMMARY

This section provides the Administrator with new authority to address water pollution caused by the use of motor fuel or fuel additives. It also eliminates the use of MTBE in gasoline within 4 years.

DISCUSSION

Section 211(c) of the CAA allows EPA to regulate fuel and fuel additives that cause or contribute to air pollution. Section 3 of this bill expands current law to allow the Administrator to control fuel and fuel additives that are shown to cause or contribute to water pollution which may reasonably be anticipated to endanger the public health or welfare.

Section 3 creates a ban on the use of MTBE that shall be effective not later than 4 years after enactment of S. 950. While no regulatory action is required to effect the elimination of MTBE, EPA is required to issue regulations to implement and enforce this ban. A savings clause in Section 3 makes clear that nothing in S. 950 can be read to limit existing authority of States to prohibit or control the use of MTBE. Additionally, the bill does not grant new State authority outside of that available to States acting in accordance with Section 209 of the CAA.

*Section 4. Waiver of Oxygen Content Requirement for Reformulated Gasoline*

SUMMARY

Section 211(k)(2) of current law requires RFG to contain 2 percent oxygen by weight. That section also places other formula and performance requirements on gasoline to be sold as RFG. Section 4 of S. 950 allows Governors to waive the oxygen content requirement and establishes additional performance standards for RFG sold in States that exercise the waiver.

## DISCUSSION

The bill allows Governors 90 days from enactment to waive the oxygen requirements in Section 211(k)(2) for RFG sold or dispensed within the State. The Governor must notify the Administrator of the waiver. States that opt-in to the program, including opt-in areas, are allowed to waive the oxygen requirement as part of the opt-in application. States with areas that are required to use RFG as a result of a reclassification are permitted 90 days from reclassification to waive the oxygen requirement. This relatively brief period of 90 days for a decision by a Governor is included to provide refiners with ample opportunity to comply with changes in the RFG requirements described below before the sale of a revised formula of RFG is scheduled to start.

Gasoline sold in areas that have waived the oxygen mandate will be required to meet all other RFG requirements. Under section 4, the EPA must publish in the Federal Register the actual toxic reductions achieved by the RFG program (based on EPA RFG survey data for 1999 and 2000) in each Petroleum Administration Defense District (PADD) within 30 days of enactment. Within 270 days, EPA must promulgate regulations that set new regional toxics performance standards for States that waive the oxygen mandate. If EPA does not act within 270 days of enactment, the reductions published in the Federal Register become the new standards for States that waive the mandate. The oxygenate waiver takes effect when the new toxics standard is in place.

The new performance standards will be applied on an annual average importer or refinery-by-refinery basis to all RFG sold in a State for which the Governor waives the oxygen mandate. Credits for exceeding the performance standard will be provided by the Administrator in the same manner as credits provided under Section 211(k)(3). The Administrator must ensure that the granting or transfer of credits for use in meeting toxics performance standards will not result in higher average aggregate emissions of toxic air pollutants for the nonattainment area in which such credits are used than would occur in the absence of using such credits. The performance standards will not apply in a State, such as California, which has authority to regulate motor vehicles under Section 209(b).

The provisions regarding performance standards for toxic emissions will prevent backsliding that could result from changes in refinery product use or processes spurred by waivers of the oxygen mandate. The 2 percent oxygen content mandate requires refiners to use more oxygenates than would be necessary to meet the other performance or content standards in Section 211(k) of current law. Refiners could respond to waivers of the oxygen mandate by shifting to other high-octane components such as aromatics or alkylates. These substitutes can lead to increased emissions of toxic air pollutants, including benzene.

*Section 5. Public Health and Environmental Impacts of Fuels and Fuel Additives*

## SUMMARY

The bill directs the Administrator to require tests to determine potential public health effects of fuels or fuel additives prior to reg-

istering fuels or fuel additives and during their use. Studies under this provision will be conducted on a regular basis. In addition, EPA is instructed to study the health and environmental impacts of using ETBE and other ethers as a substitute for MTBE.

#### DISCUSSION

The existing law allows the Administrator to require fuel producers to conduct tests to determine the health and environmental effects of fuels and fuel additives. This provision makes such testing mandatory.

The Administrator should use this authority to identify and assess any adverse public health, welfare, or environmental effects from the use of motor vehicle fuels or fuel additives or the combustion products of such fuels or fuel additives. The Administrator should use the authority to assess threats to both air pollution and water pollution in order to effectively exercise the authority in Section 211(c) as amended by this legislation. This provision is intended to prevent situations such as the one presented by MTBE contamination of water supplies.

To avoid such recurrences, the Blue Ribbon Panel on Oxygenates in Gasoline recommended that EPA and others accelerate ongoing research efforts into the inhalation and ingestion health effects, air emission transformation byproducts, and environmental behavior of all oxygenates and other components likely to increase in the absence of MTBE. This should include research on ethanol, alkylates, and aromatics, as well as on gasoline compositions containing those components.

EPA has provided a list of fuel and fuel additive testing which is now underway, pursuant to Section 211 requirements. See Appendix VII for the list of on-going studies. This testing is designed to provide specific information on MTBE and five other oxygenates, as well as conventional gasoline containing typical gasoline components that would substitute for oxygenates.

#### *Section 6. Analysis of Motor Vehicle Fuel Changes*

##### SUMMARY

Section 6 requires the Administrator to publish an analysis of the changes in emissions of air pollutants and air quality due to the implementation of the provisions in S. 950. The analysis is to examine changes in all motor vehicle fuels and fuel additives and must attempt to identify and quantify any increase in emissions or air pollution caused by implementing this bill. A draft analysis is to be published within 4 years of enactment, and a final analysis is to be published within 5 years of enactment. The Administrator should include in the analysis consideration of direct and evaporative emissions, as well as combustion by-products, from the use of these fuels and fuel additives in on-road and off-road vehicles.

Section 6 requires the Administrator to develop and finalize an emissions model that reasonably reflects the effects of characteristics or components of motor vehicle fuel or emissions from vehicles in the motor vehicle fleet during calendar year 2005.

## DISCUSSION

Section 211(c) of the CAA, as amended by this legislation, provides the Administrator with the authority to regulate, control, or prohibit the manufacture, introduction into commerce, offering for sale, or sale of any fuel or fuel additive, if, in the judgment of the Administrator, the fuel or fuel additive or emission product causes or contributes to air pollution or water pollution that may reasonably be anticipated to endanger the public health or welfare. The bill requires the Administrator to exercise this authority with respect to MTBE. The bill also adds water quality as an environmental protection criterion in Title II of the Act.

Section 202(l) of the Act requires the Administrator to exercise the authorities in Sections 211(c) and 202(a) and to promulgate, and from time to time revise, regulations containing reasonable requirements to control hazardous air pollutants from motor vehicles and fuels. The regulations must reflect the greatest degree of reductions achievable, considering cost and projected available technology, and must focus on those categories of emissions that pose the greatest risk to human health or about which significant uncertainties remain.

The emissions model currently used by EPA to determine compliance in both the RFG and conventional anti-dumping gasoline programs is called the complex model. It uses 1990 average gasoline quality and 1990 model year motor vehicle technology as its baseline, and models how changes in gasoline qualities change emissions of these vehicles compared to 1990 gasoline. For purposes of this provision, EPA is authorized to update its complex model to address changes in motor vehicle technology since 1990. The motor vehicle fleet in calendar year 2005 will be different from model year 1990 vehicles. The updated model is expected to contain a mix of technologies with, for example, the newer Tier 2 technology entering the fleet.

Developing an emissions model that reflects the actual mix of motor vehicle technologies in the fleet during calendar year 2006 allows EPA to reasonably determine the change in emissions between 1999–2000 and 2005–2006 due to changes in gasoline, as the 2006 calendar year fleet should still contain the kinds of technologies found in the prior years, although with a different mix of technologies. EPA should work with a consortium of the automobile and oil industries and other interested and qualified parties to design and conduct the extensive vehicle and fuel combination testing that will be necessary to update the complex model, as was done in developing the current complex model.

An updated complex model may be useful for other related applications, such as emissions modeling for State planning. EPA could use the updated model in the RFG and conventional gasoline programs, including future RFG rulemakings, where doing so would not be inconsistent with the provisions of Section 211(k).

*Section 7. Elimination of Ethanol Waiver*

## SUMMARY

Section 4 eliminates the RVP waiver for ethanol blends of conventional gasoline provided by Section 211(h)(4).

## DISCUSSION

Blending ethanol with gasoline increases the RVP, a measure of volatility, of gasoline. Under certain conditions, gasoline with a higher RVP will have increased evaporative emissions of VOCs that can exacerbate air quality problems, unless the base gasoline has been refined sufficiently to accommodate the addition of ethanol. Manufacturing such a sub-RVP blendstock adds to the refiners' costs of production. Many factors interact to increase or reduce the probability of a higher RVP fuel leading to a reduction in air quality. Under current law, RVP limits are either required or recommended for most of the fuel sold in the nation.

Since S. 950 may result in increases in ethanol consumption over time in attainment and nonattainment areas, the elimination of the RVP waiver for ethanol will prevent any related increase in VOC emissions.

*Section 8. Additional Opt-In Areas Under Reformulated Gasoline Program*

## SUMMARY

This section of the bill provides explicit State authority to allow nonclassified areas to opt-in to the RFG program.

## DISCUSSION

Currently, 17 States and the District of Columbia rely on the RFG program as an emissions control strategy. Appendix II provides a complete list of all RFG areas. The CAAA mandated use of RFG in nine areas.<sup>11</sup> One additional area<sup>12</sup> was required to sell RFG beginning in June 1996 after being redesignated from serious to severe. Several States<sup>13</sup> have exercised the opt-in authority of Section 211(k)(6) to require the use of RFG. Areas that opted in to the RFG program prior to January 1, 2000, are required to use RFG until December 31, 2003. The Act limits opt-in actions to areas that previously violated the 1-hour ozone NAAQS and are classified according to their current status in relation to attainment of the NAAQS. States expend considerable resources in an effort to avoid violating the NAAQS because of the stringent requirements imposed on nonattainment areas by the CAA. This section allows use of the RFG program for those areas that seek to use it as an emissions control technique in the State's strategy for avoiding new violations of the NAAQS. Under this provision, once the SIP revision is approved the area will be a covered area under the Federal program. The SIP revision may include a waiver of the oxygen content requirement under Section 4 of this bill.

<sup>11</sup> Los Angeles, California; San Diego, California; Hartford, Connecticut; New York, New York; Philadelphia, Pennsylvania; Chicago, Illinois; Baltimore, Maryland; Houston, Texas; and Milwaukee, Wisconsin.

<sup>12</sup> Sacramento, California.

<sup>13</sup> States that opted-in to the RFG program include Connecticut (entire State), Delaware (entire State), District of Columbia, Kentucky, Maryland, Massachusetts (entire State), Missouri, New Hampshire, New Jersey (entire State), New York, Rhode Island (entire State), Texas, Virginia. The Governors of Arizona, Maine, New York and Pennsylvania opted-out certain opt-in areas.

*Section 9. MTBE Merchant Producer Conversion Assistance*

Authorizes a total of \$750 million over three fiscal years for grants to merchant MTBE producers for assisting in the conversion to production of other fuel additives.

APPENDIX I

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MTBE-RELATED LEGISLATION IN THE SENATE OF THE 107th CONGRESS

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S. 265 .....	Fitzgerald .....	MTBE is banned after 3 years. Gasoline containing MTBE must be labeled. EPA should assist local communities in testing and remediating contaminated drinking water supplies. Establishes an MTBE research grants program within EPA. Research and development efforts should be directed to allow ethanol use to expand sufficiently as the use of MTBE is phased out.
S. 670 .....	Daschle/Lugar	MTBE is banned within 4 years. Allows use of LUST Trust Fund. Phases in the use of alternative and renewable fuels, including ethanol.
S. 892 .....	Harkin .....	MTBE is to be phased out in 3 years. Gasoline containing MTBE must be labeled. Permits State restrictions on MTBE sale or use. EPA is required to revise reformulated gasoline performance standards. Requires the use of renewable fuels.
S. 947 .....	Feinstein/ Inhofe.	States are authorized to waive oxygen content requirements for reformulated gasoline.
S. 1006 .....	Hagel/Johnson	Phases in use of renewable fuels, including ethanol, under a motor vehicle renewable fuel program.

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ISSUE BRIEF—Methyl Tertiary Butyl Ether (MTBE)

Prepared for the NCSL Clean Air Working Group and AFI Environment Committee  
(Summarizes State legislative activity from 1999–2001, may not include all proposed legislation)

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STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

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Alabama .....	Little or no activity
Alaska .....	Little or no activity
Arizona .....	FINAL ACTION. Arizona will ban MTBE no later than 180 days after California completes its phaseout of MTBE on December 31, 2002, according to Senate Bill 1504 (HB 2386)
Arkansas .....	Little or no activity

## ISSUE BRIEF—Methyl Tertiary Butyl Ether (MTBE)—Continued

Prepared for the NCSL Clean Air Working Group and AFI Environment Committee  
(Summarizes State legislative activity from 1999–2001, may not include all proposed legislation)

## STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

California .....	FINAL ACTIONS. In March 1999, California became the first State to officially ban MTBE when Governor Gray Davis issued an executive order for a three-year phase out of the gasoline additive California SB 989 codified the governor's executive order for the phase-out of MTBE. The legislature also required that refiners submit quarterly reports to detail the amount of MTBE used in gasoline and how the amount compares to last year's use MTBE has shown up in hundreds more underground fuel links in and water quality experts have raised their estimate of the number of MTBE spills from 4,500 to nearly 6,600, a nearly 32 percent increase over the past year
Colorado .....	FINAL ACTION. Colorado's Governor signed SB 190 into law, which mandates a phasing out of MTBE by April 30, 2002. In areas where MTBE is not currently sold or stored—which includes Denver and the rest of the Front Range of the Rocky Mountains—the additive will be banned immediately
Connecticut .....	FINAL ACTION. SB 571 (signed by Governor 6/1/2000) will phase out the use of MTBE as a gasoline additive over a five-year period, and increase penalties for the unlawful discharge of gasoline
Delaware .....	The legislature is studying the groundwater problem, but as of now, no resolutions have passed or been proposed to phase out MTBE. (Source at the Department of Environmental Control)
District of Columbia.	Little or no activity
Florida .....	Florida has been monitoring its public water system for MTBE since the early 1990's; MTBE has not yet been found in amounts exceeding the EPA guidelines. No MTBE legislation has passed as of the present
Georgia .....	Little or no activity
Hawaii .....	FINAL ACTION. The Governor vetoed Hawaii HB 3021 (passed House and Senate) which would have banned MTBE by July 1, 2001
Idaho .....	Little or no activity
Illinois .....	FINAL ACTION. HB 171 was signed into law. Prohibits the use, sale, distribution, blending or manufacturing of MTBE as a fuel additive in the State beginning three years after the effective date of the legislation
Indiana .....	Little or no activity
Iowa .....	FINAL ACTION. Iowa HB 2294 died in committee. It would have prohibited the sale of MTBE, but would have permitted the sale or storage of an "incidental amount" of MTBE if the Department of Natural Resources found no threat to public health/ environment. FINAL ACTION A resolution has been considered to urge Congress or the State's congressional delegation to change the Clean Air Act to phase out MTBE
Kansas .....	FINAL ACTION SB 37 was signed into law. Prohibits the sale of gasoline containing MTBE in quantities greater than 0.5 percent by volume after July 1, 2004, provided the U.S. Environmental Protection Agency has granted the State a waiver allowing the State to ban or control MTBE

## ISSUE BRIEF—Methyl Tertiary Butyl Ether (MTBE)—Continued

Prepared for the NCSL Clean Air Working Group and AFI Environment Committee  
(Summarizes State legislative activity from 1999–2001, may not include all proposed legislation)

## STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

Kentucky .....	FINAL ACTION. House Resolution 151, passed 3/23/2000, recognized the benefits of ethanol as an effective alternative to MTBE FINAL ACTION. HB 849, which would have banned the use of MTBE, died in committee with the end of the legislative session FINAL ACTION. Senate Joint Resolution 68, which urged KY's congressional delegation to support changes to the Clean Air Act that would allow the State to opt out of the Federal RFG program, passed in the Senate, but died in committee in the House
Louisiana .....	Little or no activity
Maine .....	FINAL ACTION. Maine has not participated in the RFG program since 1999 because of concerns about a State study that detected MTBE in 15 percent of drinking water supplies. Although legislation to ban MTBE was proposed, it was tabled because the MTBE contamination of water improved rapidly
Maryland .....	FINAL ACTION. Legislation has been enacted creating a State Task Force to investigate the contamination of water supplies MTBE and to examine potential health effects. (HB 823) Environmental officials have found the gasoline additive MTBE in 66 of the 1,060 public water systems in Maryland they investigated (03/08/2000)
Massachusetts ....	FINAL ACTION. Resolution against MTBE failed in the legislature. Although no ban is likely to be proposed, the Dept. of Environmental Affairs is working with regional groups to monitor water contamination and to eventually phase out MTBE additives. NESCAUM, a coalition of New England regions, is the principle organization working to monitor the situation
Michigan .....	FINAL ACTION. On June 15, 2000, Michigan's Governor signed into law HB 5570, which bans MTBE beginning 1/1/2003, and directs the department of environmental quality to study the environmental and health effects of MTBE
Minnesota .....	FINAL ACTION. Minnesota HB 3131, a complete ban on MTBE, died in committee. However, SB 2946, which instead limits MTBE content in gasoline to 1/3 of one percent by weight, and requires that MTBE be phased out by July 2005, was signed into law. (Codified in Chapter 434)
Mississippi .....	Little or no activity

## ISSUE BRIEF—Methyl Tertiary Butyl Ether (MTBE)—Continued

Prepared for the NCSL Clean Air Working Group and AFI Environment Committee  
(Summarizes State legislative activity from 1999–2001, may not include all proposed legislation)

## STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

Missouri .....	<p>FINAL ACTION. Concurrent resolutions in the legislature urged the governor to exercise the State's right to opt out of the RFG program until a safe substitute for MTBE is identified (e.g. HCR 32, HCR 14)</p> <p>Thus pressed by the Republicans, the Governor issued an executive order which will ban MTBE after the EPA and Congress meet certain conditions. These conditions include: a requirement that the EPA provide a waiver for Missouri from provisions in the Clean Air Act and the reformulated gasoline program (RFG); a requirement that Congress prevent price increases or a decline in air quality that could result from an MTBE ban; and assurance from Congress that Missouri will not lose Federal highway funds because of its ban of MTBE</p> <p>FINAL ACTION. SB 966 (HB 1801), which was to codify the Governor's ban on MTBE, died in committee at the end of the legislative session</p> <p>PENDING ACTION. Missouri lawmakers are also urging quick action at the Federal levels to ban MTBE and to promote ethanol as a replacement. (03/29/2000)</p>
Montana .....	Little or no activity
Nebraska .....	<p>FINAL ACTION. The much-talked-about ethanol mandate in Nebraska appears to be finished for this year, and thus Gas station owners will not be required to sell an ethanol blend. The ethanol mandate instead evolved into a ban of MTBE (LB 1234), which was approved by the Governor on 4/12/2000</p>
Nevada .....	Little or no activity
New Hampshire ...	<p>FINAL ACTION. HB 758 was signed into law. Authorizes the State to opt out of the Federal reformulated gasoline program no later than January 1, 2004, and empowers the Department of Environmental Services (DES) commissioner to work with the U.S. Environmental Protection Agency to achieve that objective. Authorizes the DES commissioner to establish limits on the manufacture, use or sale of MTBE. Authorizes the DES commissioner to implement an alternative or regional gasoline approach. Establishes a gasoline remediation and elimination of ethers fund, and a fee to capitalize the fund. The fund is to be used to mitigate the presence of MTBE in groundwater</p>
New Jersey .....	<p>FINAL ACTION. SB 2137 Passed Senate; Reported out of Assembly Committee Prohibits the sale of gasoline containing methyl tertiary butyl ether (MTBE) on January 1, 2004. Directs the Department of Environmental Protection to seek from the U.S. Environmental Protection Agency a waiver from the Federal oxygenate in gasoline requirement</p>
New Mexico .....	Little or no activity
New York .....	<p>FINAL ACTION. Governor Pataki (R-NY) signed a bill banning MTBE by Jan. 1, 2004. The New York ban, drafted partly in response to contamination reported on Long Island and upstate, will prohibit the use, sale, and importation of MTBE beginning January 1, 2004 under penalty of up to \$10,000, according to Pataki's office. (5/24/2000)</p> <p>PENDING ACTION. Legislation has also been proposed to direct State agencies to study MTBE contamination of water supplies and to examine its health effects</p>
North Carolina .....	Little or no activity

## ISSUE BRIEF—Methyl Tertiary Butyl Ether (MTBE)—Continued

Prepared for the NCSL Clean Air Working Group and AFI Environment Committee  
(Summarizes State legislative activity from 1999–2001, may not include all proposed legislation)

## STATE LEGISLATION ON MTBE ADDITIVES IN REFORMULATED GASOLINE

North Dakota .....	Little or no activity
Ohio .....	Little or no activity
Oklahoma .....	Little or no activity
Oregon .....	Little or no activity
Pennsylvania .....	FINAL ACTION. In June 1999, Pennsylvania chose to no longer participate in the Federal RFG program, citing MTBE health effects as its primary reason. Studies found 73 percent of Pennsylvania's drinking water supplies were contaminated with MTBE
Rhode Island .....	FINAL ACTION. House Resolution 7999 (passed 06/07/2000) requests that the Federal government lift the requirement for 2% oxygenate levels in reformulated gasoline PENDING ACTION. Legislation has been proposed to direct State agencies to study MTBE contamination of water supplies and to examine its health effects
South Carolina ....	Little or no activity
South Dakota .....	FINAL ACTION. SB 161 was signed into law. Prohibits the sale, offering for sale, or storing of petroleum products containing or treated with methyl tertiary butyl ether (MTBE)
Tennessee .....	Little or no activity
Texas .....	Little or no activity
Utah .....	Little or no activity
Vermont .....	Little or no activity
Virginia .....	FINAL ACTION. HB 909 was enacted (4/09/2000), which directs State agencies to study MTBE contamination of water supplies and to examine its health effects
Washington .....	FINAL ACTION. HB 1015 was signed into law. Prohibits MTBE as a gasoline additive after December 31, 2003
West Virginia .....	FINAL ACTION. West Virginia SB 441, which would have prohibited MTBE use, died in committee at the end of the legislative session
Wisconsin .....	FINAL ACTION. AB 838, a proposed ban on MTBE, failed to pass the Wisconsin Assembly in 1999
Wyoming .....	Little or no activity

## APPENDIX II

## List of Reformulated Gasoline Program Areas

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, January 5, 2001

## Clean Air Act: Required Areas

LOS ANGELES .....	South Coast Air Basin, South East Desert, Ventura, CA Los Angeles County, CA Ventura County, CA Orange County, CA San Bernardino County (partial), CA Riverside County (partial), CA
SAN DIEGO County, CA .....	San Diego County, CA

## List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, January 5, 2001

Clean Air Act: Required Areas	
HARTFORD .....	New Haven—Waterbury, CT Hartford County (partial), CT Litchfield County (partial), CT Middlesex County (partial), CT New London County (partial), CT New Haven County (partial), CT Tolland County (partial), CT
NEW YORK .....	Northern New Jersey—Long Island—Connecticut area, NY-NJ-CT Fairfield County, CT Litchfield County, (partial), CT New Haven County (partial), CT Bergen County, NJ Essex County, NJ Hudson County, NJ Hunterdon County, NJ Middlesex County, NJ Monmouth County, NJ Morris County, NJ Ocean County, NJ Passaic County, NJ Somerset County, NJ Sussex County, NJ Union County, NJ Bronx County, NY Kings County, NY Nassau County, NY New York County, NY Orange County, NY Putnam, NY Queens County, NY Richmond County, NY Rockland County, NY Suffolk County, NY Westchester County, NY
PHILADELPHIA .....	Wilmington—Trenton—Cecil County, MD area PA-NJ-DE-MD New Castle County, DE Kent County, DE Cecil County, MD Burlington County, NJ Camden County, NJ Cumberland County, NJ Gloucester County, NJ Mercer County, NJ Salem County, NJ Bucks County, PA Chester County, PA Delaware County, PA Montgomery County, PA Philadelphia County, PA
CHICAGO .....	Gary—Lake County, IL—Indiana—Wisconsin area Cook County, IL Du Page County, IL Kane County, IL Lake County, IL McHenry County, IL Will County, IL Grundy County, IL, (partial) Kendall County, IL, (partial) Lake County, IN Porter County, IN

## List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, January 5, 2001

Clean Air Act: Required Areas	
BALTIMORE, MD .....	Anne Arundel County, MD Baltimore County, MD Carroll County, MD Harford County, MD Howard County, MD The City of Baltimore, MD
HOUSTON .....	Galveston—Brazoria, TX Brazoria County, TX Chambers County, TX Fort Bend County, TX Galveston County, TX Harris County, TX Liberty County, TX Montgomery County, TX Waller County, TX
MILWAUKEE .....	Racine, WI Kenosha County, WI Milwaukee County, WI Ozaukee County, WI Racine County, WI Washington County, WI Waukesha County, WI
SACRAMENTO, CA * (newly required area).	El Dorado County (partial), CA Placer County (partial), CA Sacramento County, CA Solano County (partial), CA Sutter County (partial), CA Yolo County, CA
<b>“Opt-In” Areas—Voluntary</b>	
CONNECTICUT, The Entire State 1.	Litchfield County (partial), CT Hartford County (partial), CT Middlesex County (partial), CT New London County (partial), CT Tolland County (partial), CT Windham County, CT
DELAWARE, The Entire State 1.	Sussex nonattainment area Sussex County, DE
DISTRICT OF COLUMBIA .....	Washington, DC-MD-VA area (DC portion) Entire District of Columbia
KENTUCKY .....	Cincinnati-Hamilton KY-OH area (KY portion) Boone County, KY Campbell County, KY Kenton County, KY Louisville, KY-IN area (KY portion) Jefferson County, KY Bullitt County (partial), KY Oldham County (partial), KY
MARYLAND .....	Washington, DC-MD-VA area (MD portion) Calvert County, MD Charles County, MD Frederick County, MD Montgomery County, MD Prince Georges County, MD Kent & Queen Anne's nonattainment area Queen Anne's County, MD Kent County, MD

## List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, January 5, 2001

Clean Air Act: Required Areas	
MASSACHUSETTS, The Entire State 1.	Boston-Lawrence-Worcester (E. MA) Barnstable County, MA Bristol County, MA Dukes County, MA Essex County, MA Middlesex County, MA Nantucket County, MA Norfolk County, MA Plymouth County, MA Suffolk County, MA Worcester County, MA Springfield (Western MA) nonattainment areas Berkshire County, MA Franklin County, MA Hampden County, MA Hampshire County, MA
MISSOURI (Effective Opt-In Date is June 1, 1999).	St. Louis nonattainment area St. Louis County St. Louis (city) Franklin County Jefferson County St. Charles County
NEW HAMPSHIRE .....	Boston-Lawrence-Worcester, MA-NH nonattainment area (NH portion) Hillsborough County, NH Rockingham County, NH Merrimack County, NH Strafford County, NH
NEW JERSEY, The Entire State 1.	Allentown-Bethlehem-Easton area (NJ portion) Warren County, NJ Atlantic City nonattainment area Atlantic County, NJ Cape May County, NJ
NEW YORK .....	Essex nonattainment area Dutchess County, NY Essex County (partial), NY
RHODE ISLAND, The Entire State.	Providence nonattainment area Bristol County, RI Kent County, RI Newport County, RI Providence County, RI Washington County, RI
TEXAS .....	Dallas-Fort Worth nonattainment area Collin County, TX Dallas County, TX Denton County, TX Tarrant County, TX

## List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, January 5, 2001

## Clean Air Act: Required Areas

VIRGINIA .....	Washington DC-MD-VA area (VA portion)
	Alexandria, VA
	Arlington County, VA
	Fairfax, VA
	Fairfax County, VA
	Falls Church, VA
	Loudoun County, VA
	Manassas, VA
	Manassas Park, VA
	Prince William County, VA
	Stafford County, VA Richmond, VA nonattainment area
	Charles City County, VA
	Chesterfield County, VA
	Colonial Heights, VA
	Hanover County, VA
	Henrico County, VA
	Hopewell, VA
	Richmond, VA Norfolk-Virginia Beach-Newport News area
	Chesapeake, VA
	Hampton, VA
	James City County, VA
	Newport News, VA
	Norfolk, VA
	Poquoson, VA
	Portsmouth, VA
	Suffolk, VA
	Virginia Beach, VA
	Williamsburg, VA
	York County, VA.
	<b>“Opt-Out” Areas**</b>
MAINE .....	Hancock and Waldo Counties, ME—Hancock County—Waldo County
PENNSYLVANIA .....	Allentown—Bethlehem—Easton, PA
	Carbon County
	Lehigh County
	Northampton County Altoona, PA
	Blair County Erie, PA
	Erie County Harrisburg—Lebanon—Carlisle, PA
	Cumberland County
	Dauphin County
	Lebanon County
	Perry County Johnstown, PA
	Cambria County
	Somerset County Lancaster, PA
	Lancaster County Pittsburgh—Beaver Valley, PA
	Allegheny County
	Beaver County
	Fayette County
	Washington County
	Westmoreland County
	Armstrong County
	Butler County Reading, PA
	Berks County Scranton—Wilkes-Barre, PA
	Columbia County
	Lackawanna County
	Luzerne County
	Monroe County
	Wyoming County York, PA
	Adams County
	York County Youngstown, OH—Warren, OH—Sharon, PA*
	Mercer, PA * Ohio counties have not opted-in.

## List of Reformulated Gasoline Program Areas—Continued

U.S. Environmental Protection Agency, Office of Transportation and Air Quality, January 5, 2001

Clean Air Act: Required Areas

NEW YORK ..... Albany—Schenectady—Troy, NY  
 Albany County  
 Greene County  
 Montgomery County  
 Rensselaer County  
 Saratoga County  
 Schenectady County  
 Jefferson County, NY  
 Buffalo—Niagara Falls, NY  
 Erie County  
 Niagara County

A proposed rule to remove the above "opt-out" areas from the requirements of the reformulated gasoline program was published June 14, 1995. [On January 1, 1995, a temporary exemption of the RFG requirements in these areas went into effect.

On July 1, 1995 this stay was extended until the Agency took final action]. The final rule, published July 8, 1996 [61 FR 35673], formally removed these areas from the list of RFG covered areas and provided States with general opt-out procedures.

The July 8 final rule was superseded by a final rule published October 20, 1997 [62 FR 54552], revising the opt-out procedures.

ARIZONA ..... Phoenix nonattainment area  
 Maricopa County (partial), AZ

Phoenix opted in the RFG program in 1997; retail stations were required to supply RFG by August 4, 1997.

In September 1997, the Governor of Arizona submitted an RFG opt-out petition for purposes of adopting a more stringent State RFG program in Phoenix.

EPA approved the opt-out petition which became effective on June 10, 1998.

MAINE ..... The following counties in Maine "opted-out" of the RFG program—the effective opt-out date was March 10, 1999: Knox & Lincoln nonattainment area  
 Knox County, ME  
 Lincoln County, ME Lewiston-Auburn nonattainment area  
 Androscoggin County, ME  
 Kennebec County, ME Portland nonattainment area  
 Cumberland County, ME  
 Sagadahoc County, ME  
 York County, ME

\* Reclassification of Sacramento from Serious to Severe was effective June 1, 1995. RFG was required as of June 1, 1996.

\*\*Note: These "Opt-Out" areas withdrew from the Federal RFG program before it went into effect on January 1, 1995.

## APPENDIX III

OFFICE OF THE GOVERNOR,  
 Sacramento, CA, April 12, 1999.

The HONORABLE CAROL M. BROWNER, *Administrator*,  
 Environmental Protection Agency,  
 401 M Street SW,  
 Washington, DC 20460.

DEAR MS. BROWNER: I am writing to request that the U.S. Environmental Protection Agency (EPA) take prompt action to waive Federal requirements that all gasoline sold in the Sacramento region and most of Southern California contain a minimum oxygen content pursuant to the provisions of the 1990 amendments to the Clean Air Act.

As I am sure you are aware, on March 26, 1999, I concluded that the use of the oxygenate methyl tertiary-butyl ether (MTBE) in California gasoline poses a significant risk to California's environment, and, accordingly, directed that MTBE be phased out of California gasoline as soon as possible. A copy of my Executive Order D-5-99, which identifies the actions we will take to remove MTBE from gasoline, is enclosed.

One of the essential elements for a rapid phase down, and eventual phase-out of MTBE in California, is action by the U.S. EPA to eliminate the current mandate that California gasoline subject to the Federal reformulated gasoline (RFG) program—about 70 percent of all gasoline in the State—must contain at least 2.0 per-

cent by weight oxygen year-round. Your action to provide this relief is needed for several compelling reasons.

Many California refineries have the capability to produce significant amounts of gasoline that provides all of the required emission reductions without using MTBE or any other oxygenate. The only reason such MTBE-free gasoline is not being made available today is U.S. EPA's enforcement of the 2.0 percent oxygen requirement. Your approval of our requested action would enable several refiners to greatly reduce their use of MTBE in the very near future.

In terms of the eventual phase-out of MTBE, your action is equally important. Under the current U.S. EPA requirements, once MTBE is phased out, the 70 percent of California gasoline that is sold in areas subject to the Federal RFG program would need to be oxygenated with ethanol. Relying on ethanol exclusively for this volume of gasoline, approximately 10 billion gallons per year, would increase the time needed to complete our phase-out of MTBE, and result in higher fuel costs to California consumers. Your action to allow the required emissions reductions to be achieved without using a minimum oxygen content in every gallon of fuel would allow us to reduce risks of future water contamination sooner, meet California's growing demand for fuel and allow flexibility to make more economical blends of gasoline.

Finally, time is of the essence. California refineries must begin a time consuming and expensive retooling process to eliminate their current reliance on MTBE. In order to complete the phase-out of MTBE by December 31, 2002 or earlier, the refiners must start immediately with the planning and design phases of the necessary refinery and distribution system modifications. It is clear that the approach taken by industry will differ substantially depending on whether, upon completion of the modifications, refiners will be subject to a mandatory Federal RFG minimum oxygen requirement. Without the mandatory oxygen requirement, the industry can design in greater flexibility and less costly processes. But in order to make informed planning and design decisions, the refiner must know in 1999—not just in 2001 or 2002 or 2003—that they will have flexibility with respect to oxygen requirements.

Because California has historically experienced the worst air quality in the nation and has long been engaged in pioneering efforts to reduce the contribution of motor vehicles to air pollution, the State has been granted unique authority by the Clean Air Act and the EPA to administer a State fuels program to reduce motor vehicle emissions. California is the only area in the country where the Federal RFG requirements apply in conjunction with comprehensive and demonstrably more effective State standards for cleaner burning gasoline. The California regulations provide complete assurances that a waiver of the Federal RFG year-round minimum oxygen content requirement will not result in a loss of any air quality.

Our regulations accomplish the needed emissions reductions without requiring a minimum level of oxygen. Numerous assessments by the auto and fuels industry, government agencies, and most recently scientists at the University of California confirm that a minimum oxygen content is not essential to making RFG that meets all emission reduction requirements. Therefore, application of the current minimum oxygen content requirement serves absolutely no purpose in California relative to its intended air quality rationale—to reduce ozone precursors and toxic emissions from vehicles.

In contrast, the minimum oxygen content requirement is having one clear effect on another area of the environment. It is increasing the risk that leaking tanks and boat engine discharges pose to water quality. As the University of California study of MTBE indicated, California's ground and surface water resources are seriously at risk because of discharges of gasoline that has been oxygenated with MTBE. Over 60 percent of the reservoirs tested have detectable levels of MTBE, and many public drinking water sources in areas like Santa Monica, Santa Clara, Sacramento and South Lake Tahoe have been contaminated and shut down because of MTBE contamination. This is what led me to direct the appropriate State regulatory agencies to devise and carry out a plan to complete the expeditious phase-out of MTBE from California gasoline.

However, in order for California to achieve this essential protection of water quality quickly and at an affordable cost, we must have flexibility relative to the minimum oxygen content currently enforced by U.S. EPA. We need this action quickly, and I am calling on you to use your broad authority to protect both the air and water environment by allowing California's reformulated gasoline rules, which provide all of the emission benefits of the Federal RFG, to be applied in lieu of the counterproductive Federal minimum oxygen content requirement.

Your prompt approval of this request will help us limit any further contamination of drinking water while we transition away from MTBE. It will not risk any adverse impact on air quality due to California's more effective State gasoline regulations. It will enable us to devise the most expeditious and cost-effective solution to the

MTBE problem in California. One that will protect our water and keep us on the road to clean air.

Thank you for your consideration of this request. Enclosed is a more detailed discussion of this issue and materials that support our request. As always we are ready to work with you to ensure that California and the EPA are working together to ensure environmental protection.

Sincerely,

GRAY DAVIS.

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## APPENDIX IV

### LETTER FROM ENVIRONMENTAL PROTECTION AGENCY

U.S. ENVIRONMENTAL PROTECTION AGENCY,  
*Office of the Administrator, June 12, 2001.*

The Honorable Governor GRAY DAVIS,  
*State Capitol,  
Sacramento, California 95814.*

DEAR GOVERNOR DAVIS: On April 12, 1999, the State of California requested a waiver from the oxygen content requirement of the Federal reformulated gasoline (RFG) program. As you know, the RFG program and the oxygen content requirement were created by the 1990 Amendments to the Federal Clean Air Act. Because of the legal constraints imposed by the Clean Air Act, I cannot grant California's waiver request.

Under the Clean Air Act, the Environmental Protection Agency is authorized to waive the oxygen content requirement only if there is clear evidence that the requirement will "prevent or interfere with the attainment by the area of a national primary ambient air quality standard." Your request for a waiver is based on the assertion that a waiver of the oxygen content requirement would aid in reducing ozone and particulate matter (PM) in California and, therefore, that the oxygen requirement interferes with California's attainment of the national ambient air quality standards (NAAQS) for ozone and PM.

Given the complexity of the issues involved, we have carefully reviewed all the information and analysis submitted by California. We have also performed our own comprehensive analysis to evaluate the possible emissions effects of a waiver. Based on our review of California's submission and our own analysis, we believe that a waiver of the oxygen requirement would likely result in a decrease in emissions of oxides of nitrogen (NO<sub>x</sub>), but an increase in emissions of carbon monoxide (CO). Our analysis also shows that there is significant uncertainty about whether emissions of volatile organic compounds (VOCs) would increase or decrease if a waiver is granted. Both VOC emissions and, to a lesser extent, CO emissions contribute to ozone formation in California. A more detailed description of this analysis is provided in the enclosure.

California's own analysis shows that, even without the oxygen requirement, fuels used in California will contain a significant amount of ethanol. When ethanol blends are added to non-ethanol containing gasoline in vehicle fuel tanks, the overall volatility of the fuel in the tank can increase significantly. The increase in volatility from this "commingling effect" raises substantial uncertainty about whether a waiver of the oxygen requirement would increase or decrease VOC emissions. Because of this uncertainty and the expected increase in CO, it is not clear whether the waiver sought by California will actually help to reduce ozone levels. Thus, the State has not met its burden of showing that the oxygen requirement interferes with its attainment of the NAAQS.

I understand that your waiver request is based in part on concerns about contamination of drinking water supplies with MTBE, which is widely used to meet the oxygenate requirement. The Bush Administration is very concerned about MTBE contamination in drinking water and groundwater. Clean air and clean water are equally important to us, and we do not want to pursue one at the expense of the other. As noted above, however, the legal requirements of the Clean Air Act limit EPA's ability to address these concerns. As I have indicated in the past, we are committed to working with Congress to develop legislation that addresses concerns about MTBE, while maintaining the air quality and other benefits of the RFG program.

We would be glad to work with you and your staff if you have any questions about this decision or seek further guidance from the Agency on these issues.

Sincerely,

CHRISTINE TODD WHITMAN.

## ANALYSIS OF AND ACTION ON CALIFORNIA'S REQUEST FOR A WAIVER OF THE OXYGEN CONTENT IN GASOLINE

## 1. INTRODUCTION

*a. The Clean Air Act requirements*

Section 211(k)(2)(B) of the Act, 42 U.S.C. §7545(k)(2)(B), establishes an oxygen content requirement for Federal reformulated gasoline (RFG), and allows EPA to waive compliance with the requirement under certain circumstances. Section 211(k)(2)(B) reads:

The oxygen content of the gasoline shall equal or exceed 2.0 percent by weight (subject to a testing tolerance established by the Administrator) except as otherwise required by this Act. The Administrator may waive, in whole or in part, the application of this subparagraph for any ozone nonattainment area upon a determination by the Administrator that compliance with such requirement would prevent or interfere with attainment by the area of a national primary ambient air quality standard.

EPA has the discretion under this section to waive the oxygen content requirement, to the extent reasonably necessary, where EPA determines that compliance with the oxygen content requirement would interfere with attainment of the primary National Ambient Air Quality Standard (NAAQS) in an ozone nonattainment area. In evaluating California's request for waiver of the oxygen requirement, EPA has analyzed the likely composition of gasoline in the relevant nonattainment area(s) with and without a waiver of the oxygen content requirement and the resulting impact of oxygen content on emissions. This analysis is needed so EPA can assess the potential effect that a waiver would have on California's efforts to attain the ozone and particulate matter NAAQS.

*b. California's waiver request*

In a letter dated April 12, 1999 from California Governor Gray Davis to Administrator Browner, California officially requested a waiver from the Federal oxygen requirement for reformulated gasoline, under Section 211(k)(2)(B).<sup>1</sup> The April 12, 1999 submittal stated that "the ARB will be revising its CaRFG program this year, and continuing the oxygen mandate will make it more difficult to maintain the emission reductions benefits needed for California's SIP." The submittal did not, however, contain the technical analysis to support the statement that the oxygen requirement might actually prevent or interfere with the attainment of the NAAQS in California. As such, the Agency believed that the request submitted by California on April 12, 1999 did not provide enough detail about the underlying analyses upon which the request was premised to allow EPA to make a careful and fully informed decision on the request.

Subsequent submittals from the California Air Resources Board (CARB) provided additional information necessary to evaluate California's request for a waiver from the oxygen requirement. In order to evaluate whether compliance with the oxygen content requirement prevents or interferes with a NAAQS, the Agency then began an independent evaluation of the data, modeling, and other information submitted by California in support of its request for a waiver from the Federal RFG oxygen requirement.

*c. California's argument for a waiver*

California's waiver request rests first on CARB's assertion that additional NOx reductions are needed in California. CARB claims that the South Coast Air Quality Management District (SCAQMD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) need additional NOx reductions beyond the commitments made in their recently approved State Implementation Plans (SIPs) for these areas to attain the National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter.

CARB then claims that without the oxygen requirement, California RFG Phase 3 (CaRFG) would achieve greater NOx reductions. CARB's assertion regarding the benefits achievable under CaRFG3 without the oxygen requirement is based primarily on the relationship between fuel oxygen and NOx formation. CARB claims that increases in gasoline oxygen content increase NOx emissions and therefore the requirement for oxygen in RFG prevents the State from achieving the maximum amount of NOx reduction from CaRFG3.<sup>2</sup> In light of the additional NOx reductions

<sup>1</sup>(Filed in docket A-2000-10, document number II.D.-1; also available at <http://www.arb.ca.gov/cbg/Oxy/wav/041299.pdf>)

<sup>2</sup>Specifically, CARB varied the values of the aromatics, olefins, sulfur, T50, T90, and benzene fuel parameters of each of the two sets of complying fuels (i.e., 2 weight percent oxygen fuels

needed in the SCAMQD and Sacramento RFG regions, CARB argues that NOx emissions resulting from compliance with the oxygen content requirement would interfere with the attainment of the ozone and PM NAAQS.

CARB acknowledges that reducing oxygen content would increase carbon monoxide (CO) emissions. CARB claims, however, that with a waiver there would be a reduction in oxygenated fuels (i.e., reduction of ethanol) which would lead to a decrease in the emissions associated with permeation of VOC through vehicle fuel system components such as hoses and seals that occurs with the use of ethanol as an oxygenate. Based on the use of reactivity factors, CARB argues that the VOC emission decrease from reduction in permeation losses offsets the increase in CO, resulting in an ozone neutral effect. (This is discussed in further detail in Section 4 below).

CARB also acknowledges that with a waiver, both oxygenated and non-oxygenated gasolines would be used, resulting in commingling of ethanol and non-ethanol gasolines in automobile gas tanks. Since ethanol acts to boost the Reid Vapor Pressure (RVP) of gasoline, such commingling would result in a VOC increase. CARB estimates that commingling would increase VOC emissions by an amount equivalent to an overall increase in RVP of 0.1 psi. CARB has set the flat limit of RVP in CaRFG3 0.1 psi lower than it otherwise would have been (i.e., 6.9 rather than 7.0) and asserts that the lower RVP offsets the VOC increase due to commingling.

#### *d. Criteria for acting on California's request*

As previously stated, the Clean Air Act requires that, in order to waive the Federal RFG oxygen requirement, EPA must determine that the requirement will prevent or interfere with the State's ability to attain a NAAQS. The key question before the agency therefore involves the air quality impacts of a waiver for the relevant NAAQS.

To address the air quality impact, it is critical to consider both the potential changes in gasoline quality which could occur if a waiver were granted and the potential emissions impacts of these changes. All relevant categories of emissions should reasonably be considered. This information is needed to evaluate the impacts of a waiver on each applicable NAAQS.

EPA believes it should not make a determination of interference or prevention and should not grant a waiver unless the impacts of a waiver are clearly demonstrated for each applicable NAAQS. Absent such a clear demonstration, EPA is not able to determine whether a waiver would aid, hinder, or have no effect on attainment of a NAAQS. It is important that the impacts of a waiver be clearly demonstrated for each applicable NAAQS, because EPA believes it should not grant a waiver unless, at a minimum, it has been clearly demonstrated that granting a waiver would aid in attaining at least one NAAQS, and would not hinder attainment for any other NAAQS.

## 2. EPA'S ANALYSIS OF THE EMISSIONS IMPACTS OF A WAIVER

### *a. Background*

EPA performed a complex analysis to evaluate the effect of a waiver on NOx, VOC, and CO inventories. In order to perform this analysis it was necessary to estimate both how emissions were likely to change as a result of fuel property changes, and how California Phase 3 RFG (CaRFG3) fuel properties were likely to differ with and without a waiver. EPA considered various pre-existing models and estimates relating fuel properties to emissions and, where warranted and feasible, produced new models to relate fuel properties and emissions for evaluation of the waiver. EPA also reviewed existing refinery modeling results which predicted the composition of CaRFG3 with and without a waiver. EPA ultimately concluded that additional refinery modeling was needed and, through its contractor MathPro, performed such modeling. EPA used these emission models in conjunction with refinery modeling results in order to estimate factors, generally as percent changes, which could then be applied to emissions inventory estimates to predict the tons/day emission changes in year 2005 resulting from a waiver. The analysis included both on-road and non-road emissions, and addressed emissions of NOx, CO, and VOC.

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and zero percent oxygen fuels) between the lower and upper bound limits that it defined for each parameter. CARB then generated over 10 million combinations of fuel properties within the bounds it defined, and using its Predictive Model for CaRFG3 (PM3) identified the subset of these hypothetical fuels which would comply with CARB's standards for its CaRFG3. CARB's simulation analysis showed that on average among the large number of complying formulations, the additional reduction in NOx associated with going from a 2 weight percent oxygen fuel to a zero oxygen fuel is about 1.5 percent. On the basis of this simulation analysis CARB claimed that the reduction of NOx is greater without oxygen independent of which fuel properties are varied.

The following brief description of the process highlights some of EPA's major decisions and assumptions. EPA's analysis is described in detail in our Technical Support Document (TSD), Docket Number A-2000-10, Document II-B-2.

*b. Refinery modeling*

EPA's initial waiver analysis included use of certain fuel property estimates from a December 9, 1999 MathPro refinery modeling analysis for the California Energy Commission. EPA concluded that this modeling, for reasons discussed in the technical support document, did not provide a sufficient basis for evaluation of California's waiver request. Consequently, EPA commissioned MathPro to do additional modeling.

The EPA MathPro modeling provided property estimates for oxygenated CaRFG3 if no waiver were granted, and property and market share estimates for non-oxygenated and oxygenated CaRFG3 if a waiver were granted. The refinery modeling investigated a number of cases in which refiners blended CaRFG3 with and without a waiver using the phase 3 predictive model, the flat limit reference specifications, and the exhaust plus evaporative VOC compliance option. In these cases the impact of various factors was considered. Specifically, this modeling evaluated the properties of CaRFG3 where oxygen was used at 2.0 percent or 2.7 percent by weight, the constraints of the Unocal patent were imposed (requiring refiners to avoid the parameter ranges established by the patent) or eliminated (assuming, for whatever reasons, refiners did not need to avoid the patent), and where MTBE use outside of California was assumed to be reduced (e.g., because of MTBE bans or refiner liability concerns) or assumed to continue at current levels.

The modeling predicted non-oxygenated CaRFG3 shares ranging from 35 percent to 74 percent if a waiver were granted, with six of the eight cases being greater than the 40 percent non-oxygenated share EPA had assumed based on earlier modeling. With an increase in oxygen content from 2.0 percent to 2.7 percent by weight, all else being constant, the analysis predicts a decrease in non-oxygenated market share. Also, it predicts that a reduction of MTBE use outside of California would result in an increase in the non-oxygenated market share of the CaRFG3 pool. The Unocal Patent may also affect the non-oxygenated/oxygenated market split. Specifically, avoidance of T50 less than 2101 F could limit the use of alkylate for premium CaRFG3, possibly increasing the use of oxygen. Based on the refinery modeling, we concluded that under a number of sets of foreseeable "waiver" circumstances, there would be substantial quantities of both oxygenated and non-oxygenated CaRFG3 produced. EPA's refinery modeling provides a number of alternative cases, incorporating the finalized version of the Phase 3 predictive model and CaRFG3 flat limit reference specifications. This allowed EPA to examine potential waiver emissions impacts under various alternative scenarios which incorporate a variety of potential conditions. EPA evaluated emission impacts for the eight basic cases from the modeling and for four cases where the "no waiver" oxygen level was 2.7 weight percent, and the "waiver" oxygen level for the oxygenated portion of the pool was 2.0 percent.

*c. Emissions modeling*

At the time that EPA began its analysis of the California waiver request, there were several available emission models which related fuel properties to emissions of on-road light duty vehicles. These were the complex model (the compliance model for Federal RFG), the Phase 2 predictive model (the compliance model for phase 2 California RFG), and the PM3 (the compliance model for phase 3 California RFG which had not yet been officially adopted). Each of these models was based on statistical regression analysis of thousands of emission test results. The Phase 3 predictive model was developed using statistical procedures and software not available for use in developing the complex model or the Phase 2 predictive model. Although additional data were used to develop the Phase 3 model, much of the same data were used in the development of all three models.

EPA was concerned that considerable disparity existed among the models in the estimated direction and magnitude of the NOx response to changes in oxygen content, all else being constant. The Phase 2 and Phase 3 models both indicate a NOx increase with increasing oxygen, however the Phase 3 model shows a much steeper response. The Complex Model, by contrast, predicts that NOx will decrease slightly as oxygen increases. It should be noted that the magnitude of the NOx response to oxygen, even as predicted by the Phase 3 model, is not large when compared to NOx emission differences between vehicles, or test-to-test variability in emissions. The small size of the oxygen effect on NOx emissions indicated in all of these models makes it difficult to detect statistically and to quantify precisely. In an attempt to resolve the uncertainty about the NOx/oxygen relationship, EPA staff and a consultant audited the process that CARB staff used to develop the Phase 3 predictive

model.<sup>3</sup> Additionally, EPA independently developed alternative models for NOx as a function of fuel properties for the Tech 4 vehicles.<sup>4</sup>

EPA's audit of CARB's model included a review of the decisions for inclusion and exclusion of data from the data set, the statistical approach, treatment of "high emitters" and selection of a final model. EPA also reviewed the sufficiency of data and the approach taken in CARB's representation of Tech 5 emissions in the predictive model. EPA's review raised a number of concerns about CARB's model development process. These concerns included CARB's decision not to consider high emitter terms for potential inclusion in the model, its decision to discard the primary results of the Phase 3 model-building process and return to the terms from the earlier Phase 2 effort, and modeling of emissions from Tech 5 vehicles. These concerns contributed to EPA's decision to pursue its development of alternative Tech 4 models for both NOx and exhaust VOCs (modeling non-methane hydrocarbons), for evaluation of the waiver request. EPA additionally concluded that there was considerable uncertainty about the accuracy of CARB's Tech 5 models, given the small amount of Tech 5 data and CARB's modeling approach which relied heavily on Tech 4 data to develop the Tech 5 models. Consequently, based on engineering judgment, EPA concluded that the best approach for waiver evaluation was to assume that Tech 5 NOx, VOC and CO exhaust emissions would not be affected by fuel property differences. EPA elected to use the Tech 3 portion of the phase 3 predictive model, and the allocations of exhaust VOCs and NOx emissions that would occur with a waiver (based on the use of CARB's emission inventory model EMFAC7g) among the three technology groups assumed in the predictive model.

While the Phase 3 predictive model contains an equation to calculate a CO credit as a function of oxygen content it does not explicitly calculate CO mass emissions as a function of fuel properties. EPA used CARB's assumptions regarding oxygen effect on CO (contained in Appendix G—"Estimation of a CO Credit" of its staff report for the CarFG3 rule) in calculating CO changes. However, EPA did not assume that the CO would change due to changes in sulfur or T50. EPA split the CO change among the Tech 3, Tech 4 and Tech 5 categories as CARB did, assuming that there would be no change in CO as a result of oxygen reduction in Tech 5 vehicles (which CARB assumed as well).

When EPA developed its alternative Tech 4 models, a number of possible candidate models resulted. Certain of these models did not show substantially different predictive utility based on statistical criteria. Therefore, EPA had to use engineering judgment of the likely effect on emissions as well as statistical measures to select the models it would use for evaluating California's waiver petition. Ultimately, EPA selected six different NOx models and decided to average results in order to determine applicable percent change factors for the waiver analysis. Similarly, EPA selected three models from among the candidate NMHC exhaust models. Two of these NMHC models contained terms which indicated that "high emitters" and "normal emitters" would respond differently to certain fuel property changes. EPA requested information, based on EMFAC7G, from CARB in order to properly weight normal and high emitter contributions.

EPA also included non-exhaust VOC emission effects in its analysis. Such effects could arise from differences in RVP in as-blended gasoline under a waiver compared to no waiver, and from in-vehicle commingling of ethanol-oxygenated and non-oxygenated gasoline. Additionally, permeation VOC emissions through non-metallic fuel system components are expected to be higher with ethanol-oxygenated gasolines than with non-oxygenated gasolines.

To quantify RVP-related changes in evaporative emissions, EPA used an equation, based on EMFAC7G, published in a report prepared by Sierra Research for the American Methanol Institute.<sup>5</sup> This equation expresses evaporative emissions, in tons per day, as a function of RVP. Rather than use the tons per day estimates directly, EPA calculated percent change factors, and applied them to evaporative VOC emission inventory estimates. CARB estimated, in its February 7, 2000 submittal, that the difference in VOC emissions due to permeation losses when comparing non-oxygenated gasoline to gasoline/ethanol blends with 2.0 weight percent oxygen is about 13 tons/day for all Federal RFG areas, assuming 100 percent penetration of non-oxygenated fuels. EPA quantified permeation effects by adjusting proportionally

<sup>3</sup> EPA utilized the consulting expertise of Southwest Research Institute (SwRI) which had previously been involved in emissions modeling efforts such as development of EPA's complex model.

<sup>4</sup> For modeling purposes, CARB separated vehicles into technology classes 3, 4, and 5. Tech 3 vehicles represent the oldest technology vehicles, Tech 4 represents "middle-aged" vehicles which make up the majority of the fleet and its emissions, and Tech 5 represents the newest technology vehicles. For a more complete description, see the TSD.

<sup>5</sup> Report No. SR00-0101 "Potential Evaporative Emission Impacts Associated with the Introduction of Ethanol-Gasoline Blends in California" January 11, 2000.

for various non-oxygenated penetrations and oxygen contents different than 2.0 weight percent, assuming that 60 percent of these permeation losses would represent SCAQMD.

The MathPro modeling indicated that the as-blended RVP of the CaRFG3 pool with a waiver would be lower than the RVP without a waiver for all scenarios. This results in a net reduction in VOC emissions for all scenarios with a waiver when exhaust, as-blended evaporative and permeation emission changes are considered. If EPA were to grant a waiver, however, in-vehicle commingling of ethanol blended oxygenated gasoline and non-oxygenated CaRFG3 would cause additional RVP increases to occur. California has estimated the likely magnitude of this increase to be about 0.1 psi (basically the lower of several RVP increases produced by CARB's analysis). EPA reviewed CARB's evaluation of the commingling effect. EPA also evaluated the possible commingling effect under various potential conditions. This analysis used a pre-existing EPA commingling model to help assess the average in-vehicle RVP increases that could occur if ethanol-oxygenated gasoline were commingled with non-oxygenated gasoline during vehicle refueling. Since EPA's model assumes that ethanol would be blended at 10 volume percent, EPA multiplied the model's RVP increase estimates by 0.8 (as CARB did) to evaluate potential RVP increases when ethanol is blended at 5.7 volume percent (2.0 weight percent oxygen). EPA also considered the analysis contained in the Sierra Research report cited earlier. EPA found that an RVP increase close to 0.2 psi is as likely to occur under a fairly broad set of conditions as a 0.1 psi increase. Since EPA recognized that there is considerable uncertainty about the magnitude of the commingling RVP increase, EPA evaluated net VOC (exhaust + as-blended evaporative + commingling evaporative + permeation) changes at various levels of RVP boost from 0 psi to 0.3 psi. For this analysis, EPA assumed that commingling RVP increases apply to non-road as well as on-road vehicles. EPA concluded that, depending on the scenario and the magnitude of the RVP increase, the net VOC benefit with the waiver would change and significantly could be reversed by the commingling component of VOC emissions. These results are discussed below.

EPA expected that non-road exhaust emission changes would be a function of oxygen content. We used information in an EPA document, Report No. NR-003, in conjunction with statewide California non-road inventory data to determine percent change factors for the waiver analysis.<sup>6</sup> Non-road RVP-related evaporative emissions were modeled using the on-road percent change factors. EPA recognized that the extremely limited amount of data available to estimate non-road effects added considerable uncertainty to the analysis. Furthermore, EPA had to make a number of assumptions to derive baseline non-road gasoline emission inventory estimates for the SCAQMD, and to separate the VOC estimate into exhaust and evaporative components.<sup>7</sup>

### 3. EMISSIONS CHANGES EXPECTED TO RESULT FROM A WAIVER

EPA's evaluation of the emissions impacts of a waiver, as discussed below, shows a likely decrease of NO<sub>x</sub> under all scenarios examined, an increase in CO under these scenarios, and significant uncertainty about the change in VOC emissions. The VOC emissions impact ranges from a decrease in VOC to an increase, largely depending on the level of commingling emissions and whether they are or are not accounted for.

*NO<sub>x</sub> Emissions Effects.* The changes that refiners would make to the composition of California gasoline in response to a waiver, when evaluated with EPA's NO<sub>x</sub> emissions model, would likely reduce NO<sub>x</sub> emissions under every scenario that we evaluated (see Table 1). This finding, which is unique to California's regulatory structure and specific to California refineries' technical configurations, is directionally in agreement with CARB predictions, though the two analyses have important differences.

*CO Emissions Effects.* With a waiver, CO emissions would increase in all scenarios, as indicated in Table 1. This is because oxygenated gasoline generally produces lower CO emissions and a mixed pool of gasoline with significant quantities of non-oxygenated gasoline would result in poorer CO emissions performance. The refinery modeling, under various scenarios, estimates the proportion of the gasoline that would be oxygenated with a waiver and thus drives the inventory effects. CARB's model was used to determine the CO effects brought about by changes in oxygen content.

<sup>6</sup>"Exhaust Emission Effects of Fuel Sulfur and Oxygen on Gasoline Nonroad Engines", Report No. NR-003, November 24, 1997, Christian E. Lindhjem, U.S. EPA

<sup>7</sup>Inventory assumptions are described in a memo in the Document II-B-1 in Docket A-2000-10.

*VOC Emissions Effects.* Our analysis shows that the impact of a waiver on VOC emissions would be mixed. Exhaust VOC emissions would be higher with a waiver, as indicated when EPA's VOC emissions model is used to predict exhaust VOC emissions from the fuels that our refinery analysis indicates are likely to be produced with and without a waiver. But the refinery modeling also indicates that the RVP of both oxygenated and non-oxygenated fuels produced under a waiver would be lower than without a waiver, with a consequent reduction in "as-blended" evaporative emissions. Additionally, the smaller proportion of gasoline containing ethanol in the waiver case would also tend to reduce permeation emissions. (Permeation is the escape of gasoline components through the material used in soft fuel system components. Such losses are increased by the presence of ethanol in gasoline.) In the absence of any commingling considerations (discussed below), the net result of these opposite exhaust and non-exhaust effects would be a reduction in VOC emissions with a waiver, though the magnitude of the reduction varies across scenarios. As with NO<sub>x</sub>, the conclusion that the RVP of fuels produced with a waiver would be lower than without a waiver is based on the specific circumstances of California regulations and the fuel formulation decisions likely to be made by refineries supplying the California market.

Commingling effects on VOC emissions occur when ethanol-oxygenated gasolines and gasolines without ethanol are mixed in vehicle fuel tanks. This is due to the volatility boost caused when ethanol is added to all-hydrocarbon gasoline. This boost in volatility occurs even when a small amount of ethanol is added to gasoline. Therefore, in order to produce an ethanol-containing RFG meeting evaporative emissions requirements, the hydrocarbon blendstock to which the ethanol is added must have very low volatility to accommodate increased volatility produced by the ethanol. If the non-oxygenated RFGs are "commingled" in vehicle fuel tanks with ethanol RFG, the ethanol will similarly increase the volatility of these non-oxygenated RFGs resulting in an overall volatility of the "commingled" blends greater than that of either the ethanol RFG or the non-oxygenated RFG prior to commingling. In other words, when a vehicle with a partially full tank is refueled with a different type of gasoline (i.e., ethanol-oxygenated in the tank and non-oxygenated added or vice versa), the presence of ethanol will cause the resulting mixture to have an overall RVP greater than the original RVP of either of the gasolines prior to refueling.

Without a waiver it is reasonable to believe that there would be no appreciable commingling effects, since all of the gasoline in the RFG areas would contain ethanol.<sup>8</sup> With a waiver, commingling would certainly occur and would exert an upward pressure on VOC emissions. While the directional impact on emissions from commingling is clear, its magnitude is very difficult to forecast as it depends upon estimates of the oxygenated/non-oxygenated market share, the oxygen content used in ethanol-oxygenated RFG, and vehicle owners' refueling behavior (including brand loyalty and full versus partial fill-ups), among other variables.

CARB estimated that commingling would have the effect of raising the RVP of gasoline by about 0.1 psi. CARB's analysis assumed ethanol use in 100 percent of premium gasoline and 46 percent of regular gasoline, no grade switching (thus restricting the occurrence of commingling only vehicles using regular (i.e., non-premium) gasoline), a gasoline pool comprising 75 percent regular gasoline and 25 percent premium, and 63 percent of regular grade customers switching brands, potentially resulting in commingling. Using a "simplified" analysis CARB calculated the RVP boost for each possible outcome under two scenarios (three refills with initial tank volume at the quarter tank level and 4 refills at the half tank level) and averaged the results for each scenario. CARB estimated the RVP increase of the gasoline pool by multiplying the average result by the commingling probability (63 percent) and the regular grade market share (75 percent). Average increases (above 7 psi) were 0.12 psi for the quarter tank scenario and 0.16 psi for the half tank scenario. These calculations were based on ethanol content of 10 volume percent (about 3.5 weight percent oxygen) in ethanol oxygenated gasoline. CARB determined, based on the University of California, Davis commingling model, that the boost with 5.7 volume percent ethanol content RFG (about 2.0 weight percent oxygen) would be about 80 percent of the boost with 10 volume percent.<sup>9</sup> Consequently, CARB applied an 80 percent adjustment factor to its 10 volume percent RVP boost estimates to estimate the boost if 5.7 volume percent ethanol content oxygenated RFG were used.

<sup>8</sup>There is actually always some commingling where one of two adjacent areas has ethanol in its gasoline owing to travel across area boundaries and the resulting fuel mixing. Some of this will occur in California with or without a waiver. We considered the difference in the magnitude of this cross-border commingling between waiver and non-waiver situations to be small enough to ignore for the purposes of this analysis.

<sup>9</sup>A commingling model developed by Dr. D.M. Rocke, University of California at Davis.

Resultant estimates were 0.10 psi for the quarter tank scenario and 0.13 psi for the half tank scenario.

We believe that a 0.2 psi estimate of the commingling effect (as seen in Table 1 and further explained in the Technical Support Document) is at least as likely to be the case as CARB's 0.1 psi estimate. CARB estimated the commingling effect by calculating a small number of refueling iterations under a set of assumptions that would tend to produce an RVP boost estimate at the lower end of the range of likely RVP increases (i.e., 100 percent ethanol use in premium gasoline, no grade switching, and ethanol content at 5.7 volume percent). Furthermore, EPA's analysis indicates that even with these assumptions concerning ethanol use, content and grade switching, the commingling effect is still likely to be about 0.17 psi which is closer to 0.2 psi than 0.1 psi.

In finalizing version 3 of the California RFG regulations, CARB adopted a 0.1 psi reduction in allowable RVP to compensate for the expected increase in VOC associated with commingling if a waiver were granted. If we credit CARB's 0.1 psi reduction in allowable RVP against the additional 0.2 psi equivalent increase in VOC emissions from commingling, the net increase in VOC emissions expected from a commingling effect would be 0.1 psi. If this figure is used in estimating the effect of a waiver on the VOC inventory, all but two of our modeled scenarios show overall VOC reductions with a waiver, but considerably smaller reductions than are predicted using CARB's approach (assumption of a commingling effect of 0.1 psi, with the entire effect offset by the 0.1 psi RVP reduction). See the Table 1 column labeled "VOC 0.1 psi boost"<sup>10</sup>

The columns for VOC emissions reflect the estimated impact of a waiver on actual VOC emissions (in tons/day), considering exhaust and evaporative emissions, including commingling and permeation, from on-road and non-road vehicles. The columns differ based on the estimates of average increase in RVP associated with commingling. For example, "VOC 0.1 psi boost" would reflect the impact of a waiver on the VOC inventory if commingling increases the average RVP by 0.2 psi, but this increase is treated as partially offset by CARB's adoption of a 0.1 psi reduction in RVP.<sup>11</sup> The column "VOC no boost" would reflect the impact on the VOC inventory if commingling increases RVP by 0.1 psi, and this increase is treated as fully offset by CARB'S adoption of a 0.1 psi reduction.

The impact of a waiver on the VOC inventory differs considerably depending on the estimates of commingling (comparing the VOC columns of Table 1). This highlights the importance of commingling emissions in assessing the overall VOC impact of a waiver. Using the 0.2 psi commingling effect (based on the discussion above), and crediting CARB's 0.1 psi RVP adjustment, results in substantially less overall VOC reduction than otherwise, and we still have reasonably likely scenarios where there is a net VOC increase. Not only is commingling a quantitatively important factor in VOC emissions, it is also a component that is very sensitive to variables such as brand loyalty whose values have been only crudely estimated. As a result of this sensitivity, a plausible case can be made for commingling effects ranging all the way from 0.1 psi to 0.3 psi (see the Technical Support Document).

Our analysis indicates a waiver would likely result in a decrease in emissions of NOx, an increase in exhaust VOC, a decrease in evaporative VOC (as-blended), and an increase in CO. However, we are less confident about on-road permeation effects and off-road emissions of CO, NOx and VOC. The consistent decreases in NOx emissions shown by our analysis also indicate that there would likely also be an overall decrease in nitrogen-containing PM emissions. There is much uncertainty about the estimation of permeation and other emissions on off-road vehicles/engines as discussed in detail in the Technical Support Document. Finally, there is significant uncertainty regarding commingling effects. In summary, the impact of a waiver on VOC emissions is considerably more complex to model than the impact of a waiver on either NOx or CO emissions, and there is significant uncertainty as to the overall VOC effect of a waiverBin both the amount and the direction of the effect.

<sup>10</sup>For purposes of this decision EPA does not need to decide whether it is appropriate to offset the expected increase in emissions from commingling with the 0.1 psi RVP reduction adopted by CARB, as even if the 0.1 psi offset is applied, as discussed below, VOC reductions are too uncertain to resolve what the effect of a waiver on ozone would be.

<sup>11</sup>This column would also reflect the impact of a waiver on the VOC inventory if commingling increases the average RVP of the gasoline by 0.1 psi and the impact is not offset.

Table 1: Waiver Impacts at Various Commingling-Related RVP Boosts

No Waiver Oxy Level	Waiver Oxy Level	Nationwide MTBE Use	Unocal Patent	Waiver Case Oxygen Market Shares and Oxy Levels			Emission Inventory Changes (tons/day) (On-road, off-road and all exhaust and evaporative VOC such as permeation and commingling)				
				% Oxyfuel	% Non-Oxyfuel	Year-round Oxygen Avg	NOx	VOC no boost <sup>12</sup>	VOC 0.1 psi boost <sup>13</sup>	VOC 0.2 psi boost <sup>14</sup>	CO
2.0 .....	2.0 .....	Reduced .....	Patent not avoided.	35 .....	65	1.0	- 6.60	- 4.02	2.54	9.23	173.13
2.7 .....	2.7 .....	Reduced .....	Patent not avoided.	40 .....	60	1.5	- 7.53	- 15.24	- 9.15	- 2.94	225.19
2.7 .....	2.0 .....	Reduced .....	Patent not avoided.	35 .....	65	1.0	- 9.61	- 16.23	- 10.14	- 3.93	274.24
2.0 .....	2.0 .....	Continues .....	Patent not avoided.	50 .....	50	1.3	- 5.08	- 4.10	2.46	9.15	133.18
2.7 .....	2.7 .....	Continues .....	Patent not avoided.	60 .....	40	1.9	- 4.68	- 9.72	- 3.51	2.81	150.12
2.7 .....	2.0 .....	Continues .....	Patent not avoided.	50 .....	50	1.3	- 8.21	- 16.35	- 10.26	- 4.05	230.93
2.0 .....	2.0 .....	Reduced .....	Patent avoided ...	26 .....	74	0.9	- 7.20	- 9.05	- 2.69	3.79	197.11
2.7 .....	2.7 .....	Reduced .....	Patent avoided ...	46 .....	54	1.6	- 7.08	- 12.12	- 5.96	0.33	202.67
2.7 .....	2.0 .....	Reduced .....	Patent avoided ...	26 .....	74	0.9	- 10.89	- 15.55	- 9.44	- 3.20	300.23
2.0 .....	2.0 .....	Continues .....	Patent avoided ...	50 .....	50	1.3	- 4.84	- 8.17	- 1.80	4.69	133.18
2.7 .....	2.7 .....	Continues .....	Patent avoided ...	65 .....	35	2.0	- 4.78	- 9.35	- 3.13	3.20	131.36
2.7 .....	2.0 .....	Continues .....	Patent avoided ...	50 .....	50	1.3	- 8.73	- 14.73	- 8.61	- 2.36	230.93

<sup>12</sup> This scenario is equivalent to a 0.1 psi RVP boost from commingling completely offset by California's 0.1 psi adjustment to its standards.

<sup>13</sup> Equivalent to a 0.2 psi RVP boost from commingling offset by California's 0.1 psi adjustment to its standards resulting in a net commingling effect of 0.1 psi.

<sup>14</sup> Equivalent to a 0.3 psi RVP boost from commingling offset by California's 0.1 psi adjustment to its standards resulting in a net commingling effect of 0.2 psi.

## 4. EFFECTS ON OZONE OF EMISSION CHANGES FROM A WAIVER

Given an expected reduction in NO<sub>x</sub>, an increase in CO, and significant uncertainty about the overall change in VOCs, the evidence is not clear what impact the emissions changes from a waiver would have on ozone.

All three of the pollutants discussed above influence ozone formation. The atmospheric chemistry is complex, but directionally we would expect NO<sub>x</sub> reductions to reduce ozone formation, CO increases to contribute to ozone formation, and VOC emissions to either increase or reduce ozone, depending on whether VOC emissions increase or decrease. In order to determine the direction of the overall impact on ozone from the changes in these three pollutants, we must consider the expected change in each of them and the overall balance that results from the directionally different impacts on ozone.

EPA does not believe that the evidence provided by California and developed through its own analyses clearly demonstrates what effect a waiver would have on ozone. This is because: 1) there are three pollutants whose emission rates would be altered by a waiver, and all three affect ozone formation, 2) these pollutants are not equivalent, on a ton-for-ton basis, in their effects on ozone formation, and 3) while NO<sub>x</sub> will go down with a waiver, CO is expected to go up and VOC may go up or down resulting in an uncertain impact on ozone. (The uncertainties regarding the combined effect on ozone are more thoroughly discussed in the TSD.)

## 5. CONCLUSION

EPA has carefully evaluated all of the information in front of it, including information submitted by CARB, other interested parties, and developed by EPA. After considering what effect a waiver might have on the properties of California reformulated gasoline, and the effect this change in fuel properties would have on emissions from highway and off-road vehicles and equipment, EPA concludes that there has been no clear demonstration as to what effect a waiver would have on ozone. There is significant uncertainty associated with determining the expected emissions impact of a waiver, largely based on uncertainty regarding the expected impact on VOCs produced when gasoline containing ethanol is mixed with other gasolines in the marketplace. As a result, there is significant uncertainty in balancing the emissions impacts of the three different pollutants involved, each of which affect ozone, and determining their overall effect on ozone. This uncertainty has not been resolved, even using the approach suggested by CARB. Since there has been no clear demonstration of what effect a waiver would have on ozone, it is appropriate to deny California's request for a waiver.<sup>15</sup>

## APPENDIX V

STATE OF NEW HAMPSHIRE,  
OFFICE OF THE GOVERNOR,  
Concord, NH, May 30, 2001.

Hon. CHRISTINE TODD WHITMAN, *Administrator*  
*U.S. Environmental Protection Agency*  
*Ariel Rios Federal Building*  
*1200 Pennsylvania Avenue, NW*  
*Washington, DC 20460*

RE: PETITION TO OPT OUT OF THE FEDERAL REFORMULATED GASOLINE PROGRAM

DEAR ADMINISTRATOR WHITMAN: I am writing to follow-up on my letter of April 16, 2001 notifying you of my decision to withdraw the State of New Hampshire from the Federal Reformulated Gasoline (RFG) program immediately.

I understand that EPA regulations require that any opt-out petition must describe the role that RFG plays in our State Implementation Plan (SIP), and identify those alternative air quality control measures that the State will adopt to replace RFG in our SIP. Enclosed is the documentation necessary to meet this requirement. I also understand that these measures must be implemented by the State and approved by EPA into our SIP before New Hampshire's opt-out can become effective. Therefore, at my direction, the New Hampshire Department of Environmental Services has commenced the rulemaking process that will enable these measures to be incorporated into the State's SIP at the earliest possible date.

<sup>15</sup> Since we are denying California's request based upon uncertainty associated with the effect of a waiver on ozone, we need not decide whether the expected reduction in NO<sub>x</sub> from a waiver and the associated reduction in PM would support a determination of interference with the PM NAAQS.

New Hampshire's citizens and elected officials are deeply concerned about the impacts of MtBE on our drinking water supplies. In the last six years, MtBE contamination of water supplies has increased steadily, to the point where over 16 percent of public water supplies statewide have some level of MtBE contamination, with one county having more than 24 percent—nearly one in four—of its public water supplies contaminated to some degree by MtBE. Recently, the New Hampshire House of Representatives passed legislation (HB 758) directing the State to opt-out of the RFG program as soon as possible. This bill is now pending in the New Hampshire State Senate, where passage is also likely. The fact that New Hampshire's legislative and executive branches are speaking with one voice on this issue is indicative of the importance New Hampshire citizens place on clean water and the urgency with which they want the MtBE problem resolved. I hope EPA will recognize this importance and urgency, and respond by acting quickly and affirmatively on New Hampshire's petition to opt-out of the Federal RFG program and to enable the State to do so without delay.

Thank you for your attention to this critical matter. Please feel free to contact me or Robert Varney, Commissioner of the Department of Environmental Services, as needed.

Very truly yours,

JEANNE SHAHEEN.

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PETITION TO OPT NEW HAMPSHIRE OUT OF THE FEDERAL REFORMULATED GASOLINE PROGRAM

New Hampshire Governor Jeanne Shaheen wrote to U.S. Environmental Protection Agency (EPA) Administrator Christine Todd Whitman on April 16, 2001 conveying the intent of the State of New Hampshire to opt out of the Federal Reformulated Gasoline (RFG) program. Significant quantities of oxygenating compounds are required to be present in gasoline under the Federal RFG program. Since the Federal RFG program commenced in 1995, the oxygenate methyl tertiary-butyl ether (MtBE), has become a significant contamination threat to New Hampshire's groundwater and surface water resources. Existing Federal statutory and regulatory barriers to reducing and/or phasing-out the use of MtBE leave States with few constructive options to rectify this environmental and public health problem. New Hampshire has enjoyed the notable air quality benefits of the Federal RFG program, and would like to maintain its contribution to air quality. At this point, however, there appears to be no effective, legal route by which New Hampshire can address the MtBE problem except to opt out of the Federal RFG program.

MtBE is the additive most often used by petroleum refiners serving the Northeast to meet the Federal Clean Air Act (CAA) §211k(2)(B) requirement that RFG contain 2.0 percent oxygen by weight (i.e., the "oxygen mandate"). Since the MtBE problem originated with this statutory provision, the best resolution is Congressional action to repeal the oxygenate mandate. Having invested considerable effort and resources pursuing such action over the last two years, however, New Hampshire is concerned that Congressional action to address the underlying origin of the MtBE problem may not happen in the near future. Faced with no other viable, effective, or legal alternative under the Federal Clean Air Act to reduce or eliminate MtBE concentrations in New Hampshire's gasoline, the State is compelled to submit this formal petition to opt out of the Federal RFG program.

Under authority provided in §211(k)(6) of the Federal Clean Air Act, New Hampshire petitioned EPA to participate in the Federal RFG program on October 22, 1991. Notice of EPA's approval of this request was posted in the Federal Register on December 23, 1991 (56 FR 66444). The State of New Hampshire, in accordance with the procedures outlined 40 CFR 80.72, now hereby petitions EPA to opt out of the Federal RFG program and to remove all New Hampshire counties from the list of "covered areas" delineated in 40 CFR 80.70. Upon approval—of this petition by EPA at the four-county area in New Hampshire where Federal RFG is currently required (specifically Hillsborough, Merrimack, Rockingham, and Strafford counties) will no longer be subject to the requirements of the Federal Clean Air Act Section 211(k) and the Federal RFG rule (40 CFR Part 80) for gasoline supplied and sold in those areas, including the specification that such gasoline contain 2 percent oxygen by weight.

Based on a review of the applicable statutory provisions and EPA's RFG rule, as well as discussions. With EPA's regional staff, New Hampshire understands that the submissions required for EPA approval of the State's request to opt out of the RFG program include:

- A formal opt out request pursuant to 40 CFR 80.72, including a list of all prior State Implementation Plan (SIP) submittals which utilize Federal RFG emission re-

duction benefits—benefits that must be replaced upon eliminating Federal RFG in New Hampshire;

- SIP revisions containing the State rules promulgated to replace the emission reductions benefits provided by Federal RFG; and
- A request for a waiver of CAA §211(c)(4)(A), pursuant to §211(c)(4)(C), in order to adopt a State control measure that affects federally regulated fuels or fuel component.

This document is the formal request to opt out of the Federal RFG program, and it outlines all New Hampshire SIP submittals that use RFG emission benefits to satisfy Federal emission reduction requirements. It also describes New Hampshire's plans for satisfying those requirements via other means. The New Hampshire Department of Environmental Services (DES) has initiated expedited rulemaking procedure to enact replacement emissions reductions and is preparing the necessary SIP amendments.

RFG has been included in certain New Hampshire SIP revisions as a mobile source emissions control measure for volatile organic compounds (VOCs), nitrogen oxides (NOx), and carbon monoxide (CO). Attachment 2 lists these SIP revisions and their approval status at EPA. As detailed further below, New Hampshire will replace Federal RFG as a VOC and/or NOx control measure by adopting rules implementing "Oxy-Free Reformulated Gasoline" (OFRFG) that will be substantively identical to Federal RFG, except that no minimum oxygen content will be required.

New Hampshire's §211(c)(4)(A) waiver request will be submitted concurrent with the State's SIP modifications in order to enact State rules on OFRFG. At the present time, New Hampshire's ozone nonattainment areas have achieved "clean data" status, where three-year average monitored ozone concentrations are consistent with the National Ambient Air Quality Standard (NAAQS). The State of New Hampshire believes that the mobile source VOC and NOx benefits of Federal RFG have contributed to this achievement, and that these fuel-related air quality benefits must be retained in order to meet the ozone NAAQS on a going-forward basis. New Hampshire's approach of substituting OFRFG for Federal RFG retains these benefits, simplifies the demonstration of equivalency with RFG, can be more readily implemented than other control measures, and should accommodate timely approval of this petition.

The CAA and the Federal RFG rule in 40 CFR 80.41 impose requirements on refiners that RFG meet a complex combination of specifications and emissions reduction performance standards for VOCs and NOx. OFRFG will be adopted as a State rule that will incorporate by reference applicable Federal RFG requirements, except for the oxygen requirement. New Hampshire recognizes that to the extent that OFRFG is equivalent to Federal RFG, OFRFG may also result in lower toxic emissions. However, the State believes that maximizing the similarity between OFRFG and Federal RFG will provide greater consistency with respect to recently adopted Federal regulations relative to gasoline toxics and in refiners' production processes, resulting in lower costs.

New Hampshire's plans for OFRFG are consistent with the findings and recommendations of EPA's independent Blue Ribbon Panel on the use of oxygenates in gasoline, which recommended elimination of the minimum oxygen requirement for Federal RFG. This position was supported by EPA and the American Petroleum Institute, both of which were represented on the panel. DES anticipates that refiners serving New Hampshire will seek to reduce MtBE levels for both environmental and economic reasons. MtBE is one of the most expensive components of gasoline, so refiners may reduce MtBE levels simply to reduce costs. In addition, since MtBE poses such a threat to water resources, it increases the potential environmental liability claims that refiners, distributors, and retailers face.

Appropriate testing, certification, and enforcement procedures for OFRFG will be adopted as necessary after consultation with EPA's regional staff. In combination, these steps will ensure that OFRFG provides the air quality benefits necessary to meet Federal emission reduction requirements and the commitments reflected in the cited New Hampshire SIP revisions.

OFRFG will be required in the same areas of New Hampshire where Federal RFG is currently required (i.e., Hillsborough, Merrimack, Rockingham, and Strafford counties), and will—by definition—provide reductions in VOC and NOx emissions equivalent to Federal RFG. Relative to the State's use of Federal RFG for CO reductions, New Hampshire will demonstrate that new vehicle and fuel standards (including the Federal Tier 2 Vehicle/Gasoline Sulfur Rule), coupled with New Hampshire's fleet turnover, will provide the necessary CO emissions reductions to maintain the integrity of the State's CO SIP commitments.

Attachment 2 shows that New Hampshire has seven SIP revisions that use RFG as a control measure to achieve federally required emission reductions. Of these, five include RFG as a VOC and/or NOx control measure, and three of these have

received final approval from EPA. Two SIP revisions include RFG as a CO control measure to maintain attainment of the Federal CO standard, and both of these have received final approval from EPA. The following sections address each of these SIP submittals, describing RFG's contribution to the required emission reductions and how OFRFG will provide the same degree of emission reductions as the Federal RFG program.

*Approved SIP Revisions Which Include Federal RFG as a VOC Control Measure*

Federal RFG is used as a VOC control measure in the following EPA-approved New Hampshire SIP revisions:

- 1996 15 percent VOC Rate of Progress Plan (approved December 7, 1998, 63 FR 67405);
- Stage II Comparability Analysis SIP Revision (approved September 29, 1999, 64 FR 52434); and

- Clean Fuel Vehicles SIP Revision (approved September 29, 1999, 64 FR 52434).

To replace Federal RFG as a VOC control measure in these SIP revisions, DES will adopt rules implementing OFRFG. By definition, OFRFG will provide reductions in VOC emissions equivalent to Federal RFG, so no change from the VOC emission reduction values in the existing SIP revisions is expected. OFRFG will be required in the same areas of New Hampshire that Federal RFG is currently required (i.e., Hillsborough, Merrimack, Rockingham, and Strafford counties). Upon final adoption of its OFRFG rules, DES will submit corresponding modifications to these currently approved SIP revisions. Using an expedited process, DES intends to complete this rulemaking within 60 days.

*Approved SIP Revisions Which Include Federal RFG as a CO Control Measure*

Federal RFG is referenced as part of New Hampshire's demonstration that the Manchester and Nashua areas will continue to maintain attainment of the National Ambient Air Quality Standard (NAAQS) for CO, as outlined in the following maintenance plan SIP revisions:

- Redesignation to Attainment for CO in Manchester, NH (approved November 29, 2000, 65 FR 71060); and
- Redesignation to Attainment for CO in Nashua, NH (approved November 29, 2000, 65 FR 71060).

While some CO benefits are associated with the use of Federal RFG in older vehicles, the Manchester and Nashua areas have monitored attainment with the CO NAAQS since 1990 (i.e., five years before the Federal RFG program was implemented in New Hampshire). Federal RFG was clearly not necessary to attain the CO standard in these areas, and is not necessary to continue to maintain compliance with the CO NAAQS in the future. New Hampshire will submit revisions to these approved SIP provisions demonstrating that fleet turnover and new Federal vehicle and fuel standards will provide adequate CO emissions reduction benefits to maintain the integrity of the State's CO SIP commitments. DES will work with EPA regional staff and CO modeling staff at the New Hampshire Department of Transportation to determine how best to make this demonstration, and to expeditiously follow through with all necessary submittals to correspondingly modify New Hampshire's currently approved CO SIP revisions. The time frame for this process depends on the availability of EPA regional staff, but is anticipated to proceed expeditiously.

*New Hampshire Post-1996 Reasonable Further Progress Plan SIP Revision*

Federal RFG is used as a VOC control measure in New Hampshire's Post-1996 Reasonable Further Progress Plan SIP Revision. EPA approval of this SIP revision is currently pending. New Hampshire does not intend to withdraw this SIP revision. However, because opting out of the Federal RFG program could affect both the administrative completeness and the ultimate approval of this SIP revision, the State will replace Federal RFG as a VOC control measure by adopting rules to implement a OFRFG that will provide VOC emissions reductions equivalent to those achieved by Federal RFG. As a result, no change from the VOC emission reduction values in the pending SIP revision is expected. As noted above, OFRFG will be required in the same areas of New Hampshire that Federal RFG is currently required (i.e., Hillsborough, Merrimack, Rockingham, and Strafford counties). Also as noted above, upon final adoption of its OFRFG rules, DES will submit a corresponding modification to this currently pending SIP revision. Using an expedited process, DES intends to complete this rulemaking within 60 days.

*New Hampshire 2003 Ozone Attainment Demonstration SIP Revision*

Federal RFG is used as a VOC and NO<sub>x</sub> control measure in New Hampshire's 2003 Ozone Attainment Demonstration SIP Revision. Specifically, the photochemical modeling conducted to demonstrate attainment in this SIP revision assumed that

Federal RFG would be required in New Hampshire's four-county nonattainment area. EPA approval of this SIP revision is currently pending. New Hampshire does not intend to withdraw this SIP revision. However, because opting out of the Federal RFG program could affect both the administrative completeness and the ultimate approval of this SIP revision, New Hampshire will replace Federal RFG as a VOC and NOx control measure by adopting rules to implement a OFRFG that will provide VOC and NOx emissions reductions equivalent to those achieved by Federal RFG. As a result, no change from the VOC and NOx emission reduction values in the pending SIP revision is expected. Again, OFRFG will be required in the same areas of New Hampshire that Federal RFG is currently required (i.e., Hillsborough, Merrimack, Rockingham, and Strafford counties). Upon final adoption of its OFRFG rules, DES will submit a corresponding modification to this currently pending SIP revision. Using the expedited process noted above, DES intends to complete this rulemaking within 60 days.

Currently, 40 CFR 80.72(c) prohibits States from opting out of the Federal RFG program until January 1, 2004. But for this constraint, EPA and New Hampshire could together move rapidly to alleviate the increasing threat of MtBE contamination by enabling the State to opt out of the Federal RFG program prior to January 1, 2004. Given the extent of the MtBE contamination that has resulted from the use of Federal RFG, the State of New Hampshire re-emphasizes and reiterates the request made in Governor Shaheen's April 16, 2001 letter that EPA address this section of the Federal RFG rule, either in a formal rulemaking process or through the use of enforcement discretion, to allow New Hampshire to pursue all earlier opt out date than January 1, 2004, and to provide such other relief as may be possible.

Submitted this 30th day of May in the year 2001,

ROBERT W. VARNEY, *Commissioner*.

*New Hampshire Department of Environmental Services.*

ATTACHMENT 2

State Implementation Plan (SIP) Revision	Submission Date	EPA Approval Status	Federal Register Notice
New Hampshire 1996 15% VOC Rate of Progress Plan.	Submitted to EPA August 29, 1996.	Approved by EPA December 7, 1998.	63 FR 67405
New Hampshire State II Comparability Analysis.	Submitted to EPA April 30, 1998.	Approved by EPA September 29, 1999.	64 FR 52434
New Hampshire Clean Vehicles SIP.	Submitted to EPA June 7, 1994.	Approved by EPA September 29, 1999.	64 FR 52434
Carbon Monoxide (CO) SIP Revision Re-designation to Attainment for CO in Manchester, NH.	Submitted to EPA December 11, 1998.	Approved by EPA November 29, 2000.	65 FR 71060
Carbon Monoxide (CO) SIP Revision Re-designation to Attainment for CO in Nashua, NH.	Submitted to EPA November 30, 1998.	Approved by EPA November 29, 2000.	65 FR 71060

State Implementation Plan (SIP) Revision	Submission Date	EPA Approval Status	Federal Register Notice
New Hampshire Post-1996 Reasonable Further Progress Plan.	Submitted to EPA September 27, 1996.	EPA approval is pending. EPA found that the submittal was complete on October 9, 1996. New Hampshire fulfilled its obligations under the Clean Air Act Section 182(c)(2)(B) with the State's submittal on September 27, 1996..	n/a
New Hampshire 2003 Ozone Attainment Demonstration.	Phase I submitted to EPA June 2, 1995; found complete by EPA December 2, 1995;. Phase II submitted to EPA June 30, 1998.	EPA approval is pending. New Hampshire fulfilled its obligations under the Clean Air Act Section 182(c)(2)(B) with the State's submittal on June 2, 1995 and June 30, 1998..	n/a

## APPENDIX VI

### Summary of State Drinking Water and Groundwater Standards For MTBE

State	Groundwater (ppb)	Type of Standard or Guideline
Alabama .....	20 .....	Guideline or Action Level
Arizona .....	35 .....	Guideline or Action Level
California .....	13/5 .....	Public Health Goal/ Enforceable Aesthetic Std.
Connecticut .....	70 .....	Guideline or Action Level
Florida .....	50/500 .....	Primary Drinking Waster Std./Non-Potable Water Std.
Hawaii .....	20 .....	Groundwater Cleanup Level for Drinking Water
Idaho .....	52/261/511 .....	Pathway Dependent Action Level
Illinois .....	70 .....	Guideline or Action Level
Kansas .....	20 to 40 .....	Health Advisory
Louisiana .....	18 .....	Guideline or Action Level (10% of MCL)
Maine .....	35/25 .....	Drinking Water Std./Action Level
Maryland .....	10/50 .....	Guideline or Action Level/Drinking Water Std.
Massachusetts ..	70/50,000 .....	Primary Drinking Water Std./Vapors in Buildings
Michigan .....	240/20 to 40 .....	Enforceable Guideline/Aesthetic Guideline
Missouri .....	400/40 .....	Guideline for Non-potable and Potable Water
Montana .....	30 .....	Guideline or Action Level
New Hampshire	70/15/13 .....	Current Primary Drinking Water Std./Action Level Prop. Primary Drinking Water Std. & Groundwater Cleanup Level
New Jersey .....	70 .....	Primary Drinking Water Std.

## Summary of State Drinking Water and Groundwater Standards For MTBE—Continued

State	Groundwater (ppb)	Type of Standard or Guideline
New Mexico .....	100 .....	Interim Action Level
Nevada .....	20/200 .....	Interim Action Level for Nearby Receptors/Incomplete Exposure Pathway
New York .....	50/10 .....	Primary Drinking Water Std./Groundwater Cleanup Std.
North Carolina ..	200 .....	Guideline or Action Level
Ohio .....	40 .....	Action Level
Oklahoma .....	20 .....	Action Level
Oregon .....	20 to 40 .....	Revised Guideline
Pennsylvania .....	20 to 40 .....	Health Advisory
Rhode Island ...	40/500 .....	Primary Drinking Water Std./Non-potable Water
South Carolina ..	20 to 40 .....	Interim MCLG
Texas .....	15 .....	Guideline or Action Level
Utah .....	200/70 .....	Groundwater Cleanup Level/Drinking Water Cleanup Level
Vermont .....	40/1 .....	Primary Drinking Water Std./Action Level
Washington .....	20 .....	Guideline or Action Level
West Virginia ...	20 to 40 .....	Health Advisory
Wisconsin .....	60/12 .....	Groundwater Enforcement Std./Action Level
Wyoming .....	200 .....	Primary Drinking Water Std.

Source: New Hampshire Department of Environmental Services, January 20, 2000

## APPENDIX VII

## TESTS ON OXYGENATED FUELS CONTAINING OXYGENATES OTHER THAN MTBE

SOURCE: U.S. ENVIRONMENTAL PROTECTION AGENCY

*Blue Ribbon Panel Recommendation:* EPA and others should accelerate ongoing research efforts into the inhalation and ingestion health effects, air emission transformation byproducts, and environmental behavior of all oxygenates and other components likely to increase in the absence of MTBE. This should include research on ethanol, alkylates, and aromatics, as well as of gasoline compositions containing those components.

*Listing of ongoing research on health effects responsive to this BRP recommendation.*

Fuel and fuel additive testing required under Clean Air Act Section 211 is underway and will provide specific health information on MTBE and five other oxygenates as well as conventional gasoline containing typical gasoline components that would substitute for oxygenates. The more expanded testing on MTBE gasoline and conventional non-oxygenated gasoline will provide information that will likely be applicable to the other oxygenates as well. Pharmacokinetic testing on the oxygenates should provide information that may link health effects that may be common to more than one oxygenate. The pharmacokinetic testing may also allow extrapolations to be made regarding route of exposure. For example, inhalation toxicology testing could be extrapolated to ingestion routes of exposure. Using pharmacokinetic modeling and health effects data, EPA's Office of Research and Development is in the process of up-

dating and expanding the MTBE file in the Agency's Integrated Risk Information System (IRIS) database. In addition to updating the inhalation reference concentration (RfC) currently on IRIS, the file will contain an oral reference dose (RfD) and cancer assessment when completed (an external review draft is expected in spring of 2002). These assessments are expected to be of relevance to establishing drinking water standards and other guidance on MTBE in water. Similar efforts will begin in 2002 to develop an IRIS file for ethanol, using ingestion health effects data to estimate inhalation health risk. Finally, the exposure testing will produce valuable information regarding the transformation byproducts and environmental behavior of all oxygenates and other hydrocarbon gasoline components.

TESTS ON OXYGENATED FUELS CONTAINING OXYGENATES OTHER THAN  
MTBE

*Ethanol (EtOH)*

- Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments
  - Fertility/Teratology Assessment which includes animal studies designed to provide information on potential health hazards to the fetus arising from the mother's repeated inhalation exposure to vehicle/engine emissions before and during her pregnancy.
  - In vivo Micronucleus Assay which is an in vivo cytogenetic test which uses erythrocytes in the bone marrow of animals to detect chemical damage to the chromosomes or mitotic apparatus of mammalian cells.
  - In vivo Sister Chromatid Exchange Assay to detect the ability of a chemical to enhance the exchange of DNA between two sister chromatids of a duplicating chromosome.
  - Neuropathology Assessment including histopathological and biochemical techniques designed to develop data in animals on morphologic changes in the nervous system associated with repeated inhalation exposures.
  - Glial Fibrillary Acidic Protein Assay to determine chemically induced injury to the brain and central nervous system.
  - Histopathology Assessment including preparation of the animals targeted for pathologic examination of the lungs shall include inflation of the lungs with fixative which will permit later examination of the lung tissues by electron microscopy, if follow-up to light microscopy is indicated. In addition, respiratory tract histopathology shall be conducted.
  - Immunotoxicity Screening describing the performance and analysis of the required primary antibody response (IgM) to sheep red blood cell antigen by either the Jerne and Nordin splenic antibody plaque forming cell assay or by an enzyme-linked immunosorbent assay (ELISA)
  - Inhalation Pharmacokinetic Studies which develop and validate a physiologically-based pharmacokinetic (PBPK) model to quantitatively describe test substance disposition (uptake, distribution, metabolism and elimination).

*Ethyl tertiary butyl ether (ETBE)*

- Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments
- Fertility/Teratology Assessment
- In vivo Micronucleus Assay
- In vivo Sister Chromatid Exchange Assay
- Neuropathology Assessment
- Glial Fibrillary Acidic Protein Assay
- Histopathology Assessment
- Immunotoxicity Screening
- Inhalation Pharmacokinetic Studies

*Tertiary amyl methyl ether (TAME)*

- Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments
- Fertility/Teratology Assessment
- In vivo Micronucleus Assay
- In vivo Sister Chromatid Exchange Assay
- Neuropathology Assessment
- Glial Fibrillary Acidic Protein Assay
- Histopathology Assessment
- Immunotoxicity Screening
- Inhalation Pharmacokinetic Studies

*Di-isopropyl ether (DIPE)*

- Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments
- Fertility/Teratology Assessment
- In vivo Micronucleus Assay
- In vivo Sister Chromatid Exchange Assay
- Neuropathology Assessment
- Glial Fibrillary Acidic Protein Assay
- Histopathology Assessment
- Immunotoxicity Screening
- Inhalation Pharmacokinetic Studies

*Tertiary butyl alcohol (TBA)*

- Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments
- Fertility/Teratology Assessment
- In vivo Micronucleus Assay
- In vivo Sister Chromatid Exchange Assay
- Neuropathology Assessment
- Glial Fibrillary Acidic Protein Assay
- Histopathology Assessment
- Immunotoxicity Screening
- Inhalation Pharmacokinetic Studies

*Tests on Non-Oxygenated Gasoline and MTBE-Gasoline*

- Subchronic Inhalation Toxicity Study, with Specific Health Effect Assessments
- Two-Generation Reproductive Study which includes animal studies designed to provide information on potential health hazards to the fetus arising from the mother's repeated inhalation exposure to vehicle/engine emissions before and during her pregnancy. This

study will include neuropathology and Glial Fibrillary Acidic Protein Assay assessments conducted on the first generation of pups no sooner than 21 days after birth and no later than 28 days.

- In vivo Micronucleus Assay which is an in vivo cytogenetic test which uses erythrocytes in the bone marrow of animals to detect chemical damage to the chromosomes or mitotic apparatus of mammalian cells.

- In vivo Sister Chromatid Exchange Assay to detect the ability of a chemical to enhance the exchange of DNA between two sister chromatids of a duplicating chromosome.

- Neuropathology Assessment including histopathological and biochemical techniques designed to develop data in animals on morphologic changes in the nervous system associated with repeated inhalation exposures.

- Glial Fibrillary Acidic Protein Assay to determine chemically induced injury to the brain and central nervous system.

- Histopathology Assessment including preparation of the animals targeted for pathologic examination of the lungs shall include inflation of the lungs with fixative which will permit later examination of the lung tissues by electron microscopy, if follow-up to light microscopy is indicated. In addition, respiratory tract histopathology shall be conducted.

- Immunotoxicity Screening describing the performance and analysis of the required primary antibody response (IgM) to sheep red blood cell antigen by either the Jerne and Nordin splenic antibody plaque forming cell assay or by an enzyme-linked immunosorbent assay (ELISA)

- Inhalation Pharmacokinetic Studies which develop and validate a physiologically-based pharmacokinetic (PBPK) model to quantitatively describe test substance disposition (uptake, distribution, metabolism and elimination).

- Two-species Developmental Study which is a developmental study to determine chemically induced changes in development.

- Two-year cancer bioassay to determine the chemically induced development of tumors.

#### *Exposure Testing*

Quantify personal exposures to motor vehicle gasoline and MTBE-oxyfuel emissions (both evaporative and combustion-related) in microenvironments which represent the upper end of the frequency distribution of such exposures. This would include determination of the quantitative relationship between the personal exposures measured in the selected microenvironments, fixed site measurements in these microenvironments, and available ambient emission measurements; determination of how the high-end personal exposures (i.e., exposures approaching the 99th percentile), differ in cities and seasons of the year in which oxyfuel is used (MTBE-containing reformulated gasoline (RFG) or wintertime oxygenated gasoline) as compared with cities and seasons in which oxyfuels are typically not used; determination of the relative contributions of fuel combustion vs. evaporation as the source of personal exposures to gasoline and oxyfuel emissions. The study would provide sufficient information to serve as a baseline for extrapolation to other sites and, if possible, other oxygenated fuels.

### Animal Testing Approximate Schedules

Test Group	Fuel Mixture	Toxicology Studies	Draft Report Due to EPA	Comments Due to RG	Final Report Due to EPA
Group A	Baseline Gasoline—Gasoline MTBE.	Study Set 1 • Subchronic w/ Neurotoxicity, Immunotoxicity, and In Vivo/In Vitro Genotoxicity <sup>1</sup> . • Developmental Toxicity (Two Species).	App. 1/2002 App. 2/2002	App. 3/2002 App. 4/2002 App. 5/2002 App. 6/2002.	
		Study Set 2 • Two Generation Reproductive Toxicity.	App. 9/2002	App. 11/2002	App. 1/2003
		Study Set 3 • Oncogenicity (One Species)	App. 3/2004	App. 5/2004	App. 7/2004
Group B	Gasoline Ethanol Gasoline TAME Gasoline ETBE	Study Set 4 • Subchronic w/ Neurotoxicity, Immunotoxicity, and In Vivo/In Vitro Genotoxicity <sup>1</sup> . • Developmental Toxicity (One Species).	App. 8/2002 App. 8/2002	App. 10/2002 App. 10/2002	App. 12/2002 App. 12/2002
		Study Set 5 • One Generation Reproductive Toxicity.	App. 12/2002	App. 2/2003	App. 4/2003
Group C	Gasoline DIPE Gasoline TBA	Study Set 6 • Subchronic w/ Neurotoxicity, Immunotoxicity, and In Vivo/In Vitro Genotoxicity <sup>1</sup> . • Developmental Toxicity (One Species).	App. 11/2002 App. 12/2002	App. 1/2003 App. 2/2003	App. 3/2003 App. 4/2003
		Study Set 7 • One Generation Reproductive Toxicity.	App. 5/2003	App. 7/2003	App. 9/2003

Animal Testing Approximate Schedules—Continued

Test Group	Fuel Mixture	Toxicology Studies	Draft Report Due to EPA	Comments Due to RG	Final Report Due to EPA
Group D .....	EtOH, TAME, ETBE, DIPE, TBA .....	Study Set 8 ..... • Neat Oxygenate PK(EtOH, ETBE completed).	App. 6/2002 .....	App. 8/2002 .....	App. 10/2002

<sup>1</sup>To include the in vivo micronucleus assay and the in vivo sister chromatid exchange assay, as well as the in vitro salmonella test specified in 40 CFR para. 79.68.

## EXPOSURE STUDIES

Exposure Assessment Task	Schedule
Incorporate results of pilot studies .....	App. 2/2002
API submits revised draft protocol to EPA .....	App. 3/2002
EPA approves/disapproves revised draft protocol .....	App. 5/2002
API completes microenvironmental studies .....	App. 4/2003
API submits draft final report for review by EPA including individual peer review comments and disposition of comments.	App.10/2003
EPA provides comments on draft final report .....	App. 12/2003
API submits final report to EPA on results of testing .....	App. 4/2004

## HEARINGS

On December 9, 1997, the Committee on Environment and Public Works held a field hearing in Sacramento, CA on the presence of MTBE in the nation's water supply. Testimony was given by Nancy J. Balter, Principal, Center for Environmental Health and Human Toxicology, and former Associate Professor of pharmacology, Georgetown University Medical Center; Nachman Brautbar, Professor of clinical medicine, University of Southern California School of Medicine; Cynthia Dougherty, Director, Office of Groundwater and Drinking Water, Environmental Protection Agency; Stephen K. Hall, Executive Director, Association of California Water Agencies; The Honorable Tom Hayden, California State Senator; The Honorable Richard Mountjoy, California State Senator; Gary Patton, Counsel, The Planning and Conservation League; Craig Perkins, Director of Environment and Public Works Management, City of Santa Monica, California; Peter M. Rooney, Secretary, California State Environmental Protection Agency; David Spath, Chief, Drinking Water and Environmental Management Division, California State Environmental Protection Agency; and John Zogorski, Chief of National Synthesis on Volatile Organic Compounds and MTBE, U.S. Geological Survey.

On September 16, 1998, the Committee on Environment and Public Works held a hearing on S.1576, a bill to amend the Clean Air Act to permit the exclusive application of California State regulations regarding reformulated gasoline in certain areas within the State. Testimony was given by The Honorable Brian Bilbray, U.S. Representative from the State of California; John D. Dunlap, III, Chairman, California Air Resources Board; Douglas A. Durante, Executive Director, Clean Fuels Development Coalition; The Honorable Dianne Feinstein, U.S. Senator from the State of California; Daniel S. Greenbaum, President, Health Effects Institute; Al Jessel, Senior Fuels Specialist, Chevron Products Company; and Ned Sullivan, Commissioner, Maine Department of Environmental Conservation.

On October 5, 1999, the Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety of the Committee on Environment and Public Works held a hearing on the Blue Ribbon Panel findings on MTBE. Testimony was given by Robert H. Campbell, Chairman and Chief Executive Officer, Sunoco, Inc.; The Honorable Jake Garn, Vice Chairman, Huntsman Corporation; Daniel S. Greenbaum, President, Health Effects Institute; and Michael P. Kenny, Executive Officer, California Air Resources Board.

On June 14, 2000, the Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety of the Committee on Environment and Public Works held a hearing on the environmental benefits and impacts of ethanol under the Clean Air Act. Testimony was given by Dan Greenbaum, President, Health Effects Institute; Blake Early, Environmental Consultant, American Lung Association; Michael Graboski, Director, Colorado Institute for Fuels and High Altitude Engine Research, Colorado Department of Chemical Engineering, Colorado School of Mines; Bob Slaughter, Director, National Petrochemical & Refiners Association; Jack Huggins, Vice President, Williams Energy Services; Jason Grumet, Executive Director, Northeast States for Coordinated Air Use Management; Stephen Gatto, President and Chief Executive Officer, BC International; Gordon Proctor, Director, Ohio Department of Transportation; The Honorable Charles Grassley, United States Senator from the State of Iowa; The Honorable Tom Harkin, United States Senator from the State of Iowa; The Honorable Richard Durbin, United States Senator from the State of Illinois.

On April 27, 2001, the Committee on Environment and Public Works held a field hearing in Salem, NH on the use of the gasoline additive methyl tertiary butyl ether (MTBE). Testimony was given by Christina Miller, homeowner in Derry, New Hampshire; the Honorable Arthur Klemm, Senate President, New Hampshire State Senate; Robert Varney, Director, New Hampshire Department of Environmental Services; Dr. Nancy Kinner, Professor civil engineering, University of New Hampshire; Bill Holmberg, resident of Bow; Patty Aho, Maine Petroleum Association.

#### LEGISLATIVE HISTORY

On May 24, 2001, S. 950 was received in the Senate, read twice, and referred to the Committee on Environment and Public Works. On September 25, 2001, the committee held a business meeting to consider the bill. The bill, as amended, was ordered reported.

#### ROLLCALL VOTES

On September 25, 2001, at 9:30 a.m., the committee held a business meeting to consider S. 950 and other bills. The committee recessed at 10:35 a.m. to reconvene at the call of the chair.

The committee reconvened in the President's Room (S 216, U.S. Capitol). The committee began consideration of S. 950. Upon no further discussion of the bill, a motion to report the bill was taken by voice vote. A motion to report the bill as introduced was agreed to by voice vote. Recorded as voting against were Senators Bond, Crapo, Inhofe, Voinovich, and Warner.

#### REGULATORY IMPACT STATEMENT

The regulatory authority granted by this bill is structured to streamline and make flexible the imposition of any new requirements.

No regulatory action is required to effect the elimination of MTBE in Section 3, though the Administrator will need to issue regulations to implement and enforce this ban. The Administrator's existing authority to limit the use of fuels or fuel additives is expanded by the bill to allow consideration of water pollution effects.

The authority to waive the oxygen mandate granted to Governors under Section 4 of this bill requires no regulatory action to become effective. Section 4 authorizes regulations to establish new performance standards for toxic emissions. If regulations are not promulgated within 270 days, statutory performance standards become effective, rendering regulations unnecessary. The statutory performance standards could be revised by regulation based on data described in Section 4. Compliance with the performance standards is managed through existing regulatory structures under Section 211(k) of the CAA.

The statutory elimination of the ethanol waiver by Section 7 does not require regulatory action, but may require the Administrator to provide guidance and technical assistance to refiners and air quality planners on the change in fuel characteristics.

The provisions in Section 8 regarding additional opt-in areas rely entirely on existing authority and regulatory structures for revisions and approvals of SIPs.

#### MANDATES ASSESSMENT

In compliance with the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4), the committee finds that this bill imposes no Federal intergovernmental unfunded mandates on State, local or tribal governments. All of the bill's governmental directives are imposed on Federal agencies. Furthermore, Section 4 of the bill provides relief from the mandate in current law that RFG contain 2 percent oxygen by weight. This bill provides authority to the Governor of a State to waive that CAA mandate. In addition, the committee finds that this bill does not preempt any State, local or tribal law.

The committee finds that this bill imposes two mandates on the private sector. Section 3 of the bill prohibits the use of MTBE as a fuel additive. This ban requires the private sector to identify and use alternative fuel additives, which may increase fuel production costs. Section 7 of the bill eliminates the one-pound-per-square-inch waiver of Reid Vapor Pressure requirements that is available for fuel blends containing gasoline and 10 percent ethanol under Section 211(h)(4) of the Clean Air Act. The elimination of the waiver may increase fuel costs, particularly in non-attainment areas using ethanol blends, as refiners will be required to provide for a lower RVP blendstock to achieve air quality goals.

Section 423(c) of the Unfunded Mandates Reform Act requires each report to contain an estimate of the direct costs to the private sector required to comply with the Federal mandates. The committee is unable to include such estimates at this time because the Congressional Budget Office has not completed an analysis of the bill as reported by the committee.

#### COST OF LEGISLATION

Section 403 of the Congressional Budget and Impoundment Control Act requires that a statement of the cost of the reported bill, prepared by the Congressional Budget Office, be included in the report. That statement follows:

U.S. CONGRESS,  
CONGRESSIONAL BUDGET OFFICE,  
*Washington, DC, November 9, 2001.*

Hon. JAMES JEFFORDS, *Chairman,*  
*Committee on Environment and Public Works,*  
*U.S. Senate, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 950, the Federal Reformulated Fuels Act of 2001.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contacts are Susanne S. Mehlman (for Federal costs), who can be reached at 226-2860, and Elyse Goldman (for the State and local impact), who can be reached at 225-3220.

Sincerely,

DAN L. CRIPPEN

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*S. 950, Federal Reformulated Fuels Act of 2001, as ordered reported  
by the Senate Committee on Environment and Public Works on  
September 25, 2001*

SUMMARY

The Clean Air Act (CAA) Amendments of 1990 set up the reformulated gasoline program (RFG), which requires regions in certain States with severe air pollution to use reformulated gasoline. Other States are given the option of participating in the RFG program. Participating States are required to add chemicals called Aoxygenates

to gasoline to reduce pollution from fuel emissions. One of the most commonly used oxygenates is methyl tertiary butyl ether (MTBE), but in recent years concerns have been raised about the effects of MTBE on drinking water.

Under S. 950, the use of MTBE would be banned four years after enactment. This bill also would allow States who chose to opt-in to the RFG program to waive the oxygenate requirement in gasoline sold in their respective States. S. 950 would authorize the appropriation of \$370 million over the 2002-2006 period from the Environmental Protection Agency's (EPA's) Leaking Underground Storage Tank (LUST) Trust Fund. This funding would be used for grants to States for the cleanup and treatment of MTBE contamination and for enforcement and inspection activities related to any LUST sites.

S. 950 also would authorize the appropriation of \$750 million to EPA over the 2002-2004 period for grants to assist manufacturers of MTBE to convert facilities to produce substitute fuel additives instead of MTBE. This bill also would require EPA to draft and publish various notices and rules concerning discontinuing the use of MTBE, and to conduct several studies on motor vehicle fuels and emissions standards.

Assuming appropriation of the authorized necessary amounts, CBO estimates that implementing S. 950 would cost about \$1 billion over the 2002-2006 period. The bill would not affect direct

spending or receipts; therefore, pay-as-you-go procedures would not apply.

S. 950 contains no intergovernmental mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on State, local, and tribal governments. The act would benefit States by authorizing \$370 million in grants from the LUST Trust Fund for a variety of activities. S. 950 also would benefit States by giving them flexibility in determining whether to use oxygenates in their gasoline.

#### ESTIMATED COST TO THE FEDERAL GOVERNMENT

The estimated budgetary impact of S. 950 is shown in the following table. The costs of this legislation fall within budget function 300 (natural resources and environment).

By Fiscal Year, in Millions of Dollars						
	2001	2002	2003	2004	2005	2006
CHANGES IN SPENDING SUBJECT TO APPROPRIATION						
LUST Spending Under Current Law.						
Budget Authority <sup>1</sup> .....	0	0	0	0	0	0
Estimated Outlays .....	70	53	29	11	4	0
Proposed Changes.						
LUST Program.						
Authorization Level .....	0	250	30	30	30	30
Estimated Outlays .....	0	63	95	81	51	41
Grants to MTBE manufacturers.						
Authorization Level .....	0	250	250	250	0	0
Estimated Outlays .....	0	100	213	250	150	38
EPA Administrative Support.						
Estimated Authorization Level .....	0	3	4	2	2	2
Estimated Outlays .....	0	3	4	2	2	2
Total Spending Under S. 950.						
Estimated Authorization Level .....	72	503	284	282	32	32
Estimated Outlays .....	70	219	341	344	207	81

<sup>1</sup>The 2001 level was appropriated to the Environmental Protection Agency to administer the LUST program in that year. This program has not yet received a full-year appropriation for 2002.

#### BASIS OF ESTIMATE

For this estimate, CBO assumes that the bill will be enacted near the beginning of fiscal year 2002, that the full amounts authorized will be appropriated for each fiscal year, and that outlays will occur at rates similar to EPA's LUST program and other similar grant programs.

S. 950 would authorize the appropriation of \$1.1 billion over the 2002–2006 period and also would increase EPA’s costs for administrative activities that are not specifically authorized under the bill. This legislation would make EPA responsible for various activities related to discontinuing the use of MTBE, such as drafting and issuing notices and conducting various studies related to motor vehicle fuels and emissions standards. Based on information from EPA, CBO estimates that conducting this work would cost about \$13 million, subject to the availability of appropriated funds.

*Pay-As-You-Go Considerations:* None.

*Estimated Impact on State, Local, and Tribal Governments*

S. 950 contains no intergovernmental mandates as defined in UMRA and would impose no costs on State, local, or tribal governments. The bill would benefit States by authorizing the appropriation of \$370 million in grants from the LUST Trust Fund for a variety of activities. S. 950 also would benefit States by giving them flexibility in determining whether to use oxygenates in their gasoline.

*Estimated Impact on the Private Sector*

CBO’s estimate of the bill’s impact on the private sector will be provided at a later date.

*Estimate Prepared By:* Federal Costs: Susanne S. Mehlman Impact on State, Local, and Tribal Governments: Elyse Goldman.

*Estimate Approved By:* Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

## MINORITY VIEWS OF SENATOR JAMES INHOFE

These views are submitted to explain certain shortcomings in to S. 950, the Federal Reformulated Fuels Act of 2001, as approved by the Senate Committee on Environment and Public Works. In summary, I believe that S. 950 falls short of balancing our need for environmental protection with our need for sound national energy policy.

## GENERAL CONCERNS: S. 950 IS A DIRECT IMPEDIMENT TO THE ENERGY SECURITY OF THE UNITED STATES

In addition to serving on the Senate Committee on Environment and Public Works, it is my honor and privilege to serve as the ranking Republican member of the Readiness and Management Support Subcommittee of the Senate Committee on Armed Services. In that capacity, I have undertaken a careful review of the defense readiness of the United States, particularly as it relates to energy security. This is one of the many reasons that comprehensive energy legislation has been and remains one of the most important agenda items of the Congress. I fear that S. 950 is a hasty and ill-conceived piece of legislation. In its great desire to address the political circumstances surrounding the fuel additive MTBE, this bill makes our energy security considerably worse by shortening supply and limiting the diversity of its sources.

Never has the Congress needed to be more cognizant of the relationship between energy and national security than needs to be now. As I observed on the floor of Senate on November 1, 2001, the United States is currently 56.6 percent dependent upon foreign countries for our oil supply. There is a bipartisan and historic consensus that such dependence is dangerous. Five different Presidents—Eisenhower, Kennedy, Nixon, Ford and Carter—imposed restrictions on imports of refined petroleum products because they recognized that maintaining domestic refining capacity was essential to national security. While declining to act upon it, President Clinton also made a similar finding.

We know that the current risk factors are just as acute. I recently asked Deputy Defense Secretary Paul Wolfowitz a question regarding the strategic risk imposed by enhanced dependence of foreign sources—particularly from the Middle East. He responded, “[It] is a serious strategic issue. . . . My sense is that [our] dependency is projected to grow, not to decline. . . . I think you’re right to point out that it’s not only that we would, in a sense, be dependent upon Iraqi oil, but the oil as a weapon. The possibility of taking that oil off the market and doing enormous economic damage with it is a very serious problem.”

The inability of this nation to produce sufficient volumes of motor fuels constitutes a real threat to national security for several reasons.<sup>1</sup> First, the amount of refined products required to supply a modern military far exceeds the amount required in the past. For example, during the peak of Operation Desert Storm, the half million U.S. military personnel consumed more than 450,000 barrels of light refined products per day, nearly four times the amount used in WWII by the 2 million strong Allied Expeditionary Force that liberated Europe.

Second, the nature of modern warfare necessitates the use of high volumes of gasoline and other refined products. The shorter warning time requires massive air lifts of supplies overseas, and the increased emphasis on heavy bombing and maneuver warfare such as that used in the Gulf War create a significant demand for refined products. Further, because these modern conflicts are likely to take place in underdeveloped regions and because of the short warning period, much of the refined products necessary for mobilization must originate from domestic sources.

At mark-up for S. 950, I raised the objection that the bill would eliminate large volumes of the current gasoline pool in the United States. I was assured that the bill would be perfected before any final adoption, and that many Senators shared my concerns regarding security implications. I look forward to working with the chairman and ranking member on those changes.

#### SECTION 2B LEAKING UNDERGROUND STORAGE TANKS

In general, I have no objection to programs that make greater resources available to carry out corrective actions and engage in other remediation activities related to instances of leaking underground storage tanks. Of course, precisely because it has not been shown that MTBE constitutes any threat to human health and the environment, we must be careful to allow those empowered to use these resources the flexibility to address MTBE concerns even in the absence of the finding of any threat to human health and the environment. I am not certain the current language in S. 950 does so. It should be so clarified.

I would also observe that Section 2 contains the solution to gasoline contamination that makes the draconian provisions of Section 3 superfluous. Simply stated, if we fix the tanks and thereby improve the handling of gasoline, it makes no sense to then ban a single fuel additive among the many gasoline components that may leak. Indeed, EPA's own Blue Ribbon Panel B the study that arguably launched the interest in this legislation B bluntly stated, "The major source of groundwater contamination appears to be releases from underground gasoline storage systems."

It is my understanding that the comprehensive energy legislation adopted by the House of Representatives already contains similar LUST language regarding fuel additives. I further understanding that the Senate Environment and Public Works Committee may take up specific fixes to the LUST program. In either event, it would appear that the need for this legislation may well have been overtaken by events.

#### SECTION 3—BANNING THE SALE OF GASOLINE CONTAINING MTBE

MTBE represents an important contribution to refining volume and fuel diversity. By harnessing natural gas resources to augment the gasoline supply with non-petroleum alternatives, MTBE represents the crucial price and supply moderators in the modern fuel pool. The Undersecretary of Energy Bob Card testified before the Senate Energy and Natural Resources Committee in June 2001 that eliminating MTBE from the fuel pool amounts to a tremendous constriction in fuel supply, thus straining refining capacity. He stated:

MTBE's contribution to gasoline supplies nationally is equivalent to about 400,000 barrels a day of gasoline production capacity or the gasoline output of four to five large refineries. Additionally, a loss of ability to use MTBE may also affect the ability of the US gasoline market to draw gasoline supplies from Europe, the major source of our price-sensitive gasoline imports, since those refiners widely use MTBE, albeit typically at lower concentrations than in the U.S.<sup>2</sup>

DOE has further reported that banning MTBE in the United States further undermines the ability of the country to rely upon secure sources of gasoline supply from around the world. MTBE will continue to be used by our closest trading partners and strategic allies, thus reducing the fungibility of supply for the United States, and again straining capacity. The same DOE statement continued, "In addition to the ongoing supply problems one could expect from trying to produce both reformulated and conventional gasolines without MTBE, regional refinery or distribution supply problems could lead to additional short-term difficulties under State-by-State bans. One would expect these situations to contribute to regional gasoline shortfalls and longer periods of price volatility as markets struggle to re-balance on a State-by-State basis. In addition, for Northeast States, which depend heavily on imported reformulated gasoline, MTBE bans and the subsequent need for special gasoline blendstocks for ethanol blending could be even more problematic."<sup>3</sup>

Some have argued that should MTBE exit the market, ethanol will simply fill the gap. However, there is much uncertainty in such an approach. First, and most generally, I am concerned about the conclusions of some studies, which state that ethanol still has a net negative energy yield. This means that energy input into ethanol production exceeds the energy output on a BTU basis. Professor David Pimental of Cornell University released the most recent study conducted on the subject this year. His conclusions are clear:

Numerous studies have concluded that ethanol production does not enhance energy security, is not a renewable energy source, is not an economical fuel, and does not insure clean air. Further its production uses land suitable for crop production and causes environmental degradation (Pimentel, 1991; Pimentel and Pimentel, 1996).<sup>4</sup>

Ethanol advocates cite contrary studies on the subject of net energy yield (including a recent one from the USDA), but these studies consistently fail to consider all the energy inputs necessary to produce ethanol.<sup>5</sup> Pimental's bottom line conclusion on energy input is staggering:

The total energy input to produce 1,000 liters of ethanol is 8.7 million kcal. However, 1,000 liters of ethanol has an energy value of only 5.1 million kcal. Thus, there is a net energy loss of 3.6 million kcal per 1,000 liters of ethanol produced. Put another way, about 70 percent more energy is required to produce 1,000 liters of ethanol than the energy that actually is in the ethanol.<sup>6</sup>

The history with the ethanol tax subsidy underscores the inability of ethanol to add to energy security. The General Accounting Office reviewed the history of the subsidy in 1997, and concluded that, "ethanol tax incentives have not significantly enhanced U.S. energy security."<sup>7</sup> The Department of Energy has also rejected the

notion that a renewable fuels mandate could significantly reduce imports or enhance security.<sup>8</sup>

As ranking member of the Subcommittee on Transportation, Infrastructure, and Nuclear Safety, I also have very serious concerns about the impact of the increased use of ethanol on the Highway Trust Fund. Increasing the use of ethanol by 500 percent would translate into a 500 percent increase in the impact of the ethanol subsidy to the Highway Trust Fund. The Highway Trust Fund must not suffer as a result of an explicit or implicit ethanol mandate.

However, with the above statements having been made on ethanol, as a matter of national energy policy, I would like to see a day when domestically-produced ethanol is widely used because of technological development rather than government mandates and subsidies.

While I believe the legislation should not be adopted until such time as these troubling supply and security questions can be answered with certainty, there are some changes that must be made before any serious consideration can be given to final passage of this bill. At the very least, DOE must be empowered to review any changes to the legal status of a fuel additive in the nation as a whole or in any part of the United States. DOE must evaluate the likely consequence of any change in the legal status of fuel additives in light of such national interest considerations such as security, price, and supply of energy, and DOE's favorable recommendation should be a precondition of any change in status becoming operative. Such a suggestion is clearly consistent with the current scheme of the Clean Air Act, in the sense that the Act is a comprehensive national program that occupies the field of fuel additives based on national environmental priorities and concerns regarding interstate commerce. Having DOE explicitly review any authorized change in fuel-additive status fits well within this existing scheme.

Section 3 of S. 950 would make three amendments to the Clean Air Act: (1) it would amend the Clean Air Act to include new authority for EPA to regulate, control or prohibit a fuel or fuel additive based on water pollution; (2) it would give California special authority beyond that already given to any other State to regulate motor vehicle emissions for the purpose of protecting water quality (although it would not provide it without any authority in this regard to limit MTBE); and (3) it would require the EPA Administrator to ban the use of MTBE in gasoline not later than four years after the date of enactment. I have concerns with each of these provisions.

*The Clean Air Act Should Not be Used to Regulate Water Quality*

Section 3(a) of S. 950 amends Section 211(c)(1) of the Clean Air Act to give EPA the authority to regulate fuels and fuel additives not only to protect air quality, but also to prevent water pollution. This amendment would create a clumsy and inefficient overlap of regulatory authorities. The Clean Air Act is intended to regulate air quality. The committee has failed to show that other existing authorities, such as the Clean Water Act and Subtitle I of the Resource Conservation and Recovery Act pertaining to leaking underground storage tanks containing petroleum, are inadequate to ad-

dress the problem of groundwater contamination. Even if such a showing were made, the appropriate response would be to modify those authorities, not add new authorities in an unrelated statute. Unless and until Congress develops one comprehensive environmental statute, the Clean Air Act should not be used to regulate water quality.

*The State of California Should Not be Given Special Authority to Regulate Water Quality*

Section 3(a) of S. 950 amends Section 211(c)(4)(B) to give the State of California additional authority to regulate water quality. For the reasons cited above, we believe it is inappropriate to use the Clean Air Act to give any jurisdiction additional authority to regulate water quality.

*The Ban on MTBE is Arbitrary and Unprecedented*

Section 3 of S. 950 requires the EPA Administrator to ban the use of MTBE in gasoline not later than four years after the date of enactment. This statutory prohibition is arbitrary and unprecedented in several respects.

First, the bill makes no finding that MTBE presents a serious risk to public health. Indeed, the proponents of the bill acknowledge that the health effects of exposure to low levels of MTBE are unknown. In fact, after extensive scientific review, MTBE has not been designated as a significant risk to human health.

The committee fails to take any notice of information indicating that recent efforts to prevent gasoline (including MTBE) from being released into the environment are succeeding and, as a result, human exposure to MTBE is diminished. The committee's action obviously is rooted in the consequences of underground storage tanks that were allowed to leak gasoline into groundwater supplies in the early and mid-1990s. Since then, however, new regulations on underground storage tanks have gone into effect, minimizing the potential for releases of gasoline into the environment. In addition, a prohibition on the use of two-cycle engines on lakes and reservoirs has further minimized the risk of gasoline (including gasoline containing MTBE) in drinking water supplies.<sup>9</sup> Unfortunately, the committee's action fails to take into account these developments. As a result, the bill bears little logical relation to the actual factual circumstances. Indeed, a study in the March 2001 edition of *Soil, Sediment & Groundwater* indicates that the average MTBE concentrations in California have steadily declined over the 1995 to 1999 time period, as California came into compliance with new LUST standards.

While Congress has acted to ban certain toxic chemicals, it has never done so without an extensive scientific record and, in some cases, with an opportunity for the appropriate administrative agency to revisit the prohibition based on additional factual information. Congress has enacted only one statutory prohibition on a toxic chemical, a ban on PCBs in the Toxic Substances Control Act, enacted in 1976. But even this prohibition allowed EPA to permit the use of PCBs where it could be shown that there was no unreasonable risk. Furthermore, while EPA has taken regulatory action before to take chemicals out of commerce, such as asbestos, lead, and

a few major pesticides, EPA only exercised its authority after substantial scientific analysis and an opportunity for public review and comment. Contrary to this precedent, S. 950 neither allows EPA to make additional findings concerning the actual risk to human health nor allows EPA to exercise its regulatory expertise to provide for exceptions or changes based on changed circumstances. In this respect, the ban of MTBE is both arbitrary and unprecedented.

In no event have these extraordinary burdens of proof been met. Regarding health impacts, a consensus has emerged. Reviews by scientific panels from the U.S. Government (the National Toxicology Program), State governments (such as California's own Carcinogenic Identification Committee), and even international health organizations (such as the World Health Organization's International Agency for Research on Cancer and, more recently, the European Community) all have declined to list MTBE as a human carcinogen. Further, the Health Effects Institute, which chaired the EPA Blue Ribbon Panel, released a report on June 15, 2001 based on three new, independent studies. HEI stated that "effects of MTBE exposure are likely to be no more, and may be less, than the effects seen in previous studies." Therefore, they concluded "MTBE would be considered less likely to have adverse effects than previously thought."

Recent work in Europe again has demonstrated how outdated the committee's assumptions are as they relate to MTBE. In a report released in December 2001, the European Commission reported findings of two Finnish reports, both of which have now been published in the Official Journal of the European Communities. The main conclusion is that there is no risk to human health from MTBE. Just as this committee recognized in Section 2 of this bill, the European Commission has instead opted for commonsense measures to address the handling of gasoline and the protection of groundwater. Bans on MTBE are not part of the recommendations.

The ban of MTBE is also objectionable because it is to be implemented in four years or less. In other parts of the Clean Air Act, Congress has taken action to prohibit the sale of certain chemicals or change the design of certain products, but never according to such an abrupt schedule. In Title VI of the 1990 Clean Air Act Amendments, for example, Congress mandated a phase out of Class I chlorofluorocarbons (CFCs) over a ten-year period, and a phase out of Class II CFCs over a 30-year period. Likewise, in Title IV of the 1990 Clean Air Act Amendments, Congress ordered a reduction in emissions of sulfur dioxide over a ten-year period. Title II of the 1990 Clean Air Act Amendments provides for a tightening of standards for automobile emissions that extends in a two-step process over eleven years. Indeed, the investments required to make the Clean Air Act RFG work were substantial enough to warrant a five year planning and implementation period. It is hard to understand the rationale for banning the use of MTBE in four years or less.

The ban on MTBE in four years or less raises issues of both workability and fairness. As described initially in these views, there are serious concerns that gasoline and home heating oil markets will be seriously disrupted by the abrupt ban on MTBE. MTBE constitutes approximately three percent of the total national gasoline pool, and approximately ten percent of the gasoline pool

in areas of the United States using RFG. It is unlikely that gasoline markets can adjust to this lost volume without significant price increases and supply disruptions. And even as more crude oil is used to meet the demand for motor vehicle fuels, the supplies of crude oil necessary to produce home heating oil are reduced.

Finally, the ban on MTBE in four years or less is unfair to those who took risks and committed significant resources to make the RFG program successful. As Chairman Smith has stated on several occasions, Congress created the market for fuel additive oxygenates for an important purpose—to address serious air quality problems in many areas of the United States. MTBE producers, especially petrochemical companies, made significant investments to provide the necessary volumes of oxygenates. The ban on MTBE in four years or less deprives these producers of a reasonable return on their investment and may threaten their economic well being and the economic well being of their shareholders.

The ban on MTBE not only harms MTBE manufacturers, it also sets a dangerous precedent that could inhibit the success of federally mandated environmental programs in the future. While Congress can establish conditions for participating in interstate commerce, it cannot compel a business to produce a particular product. Thus, to encourage the development of such products, Congress must ensure that the rules for participating in markets are clear and fair, and that the participant has a reasonable expectation to earn a return on an investment. The proposed ban on MTBE in four years or less sends a disquieting message that Congress can arbitrarily change the rules at any time, with potentially ruinous consequences for those who have taken risks and made good faith investments.

#### SECTION 4—WAIVER OF THE OXYGEN CONTENT REQUIREMENT FOR REFORMULATED GASOLINE

In addition to allowing States to waive the reformulated gasoline oxygen content requirement, this section of the bill would impose new air toxics requirements that would apply in areas where the oxygen mandate has been waived.

The air toxics provision in Section 4 are extraordinarily complicated and would require EPA to develop new regional air toxics standards that would apply to RFG in areas of the country that waive the RFG oxygen mandate unless EPA's existing air toxics standards are more stringent. In areas that do not waive the oxygen mandate, and in areas of the country that do not use RFG, EPA's existing air toxics standards would apply. While the intent is to maintain the air toxics benefits of the RFG program, the scheme outlined in section 4 is too complex, and will likely result in the imposition of numerous different air toxics standards, which will likely further fragment gasoline markets. The fragmentation of gasoline markets makes it more difficult for the industry to supply consumers with the fuels they need, particularly if there is an unexpected disruption in the gasoline supply and distribution system, because it hinders the ability of the industry to shift supplies from one market to another.

Moreover, the air toxics provisions in section 4 are unnecessary. On March 29, 2001, EPA published a new rule in the Federal Register that ensures that the air toxics emissions reductions achieved

in the past will be maintained into the future, regardless of any other changes to the RFG requirements. This new rule requires that refineries continue to attain the same level of air toxics emissions performance that they attained in 1998-2000. EPA's rule ensures that refineries will continue to make RFG with the same high performance that they did in the past even if the RFG oxygen mandate is repealed, or the use of MTBE is limited. Moreover, in the new rule, EPA commits to continue to evaluate air toxics emissions and to propose additional mobile source air toxics standards, as appropriate, by July 1, 2004 and to take final action on such proposal by July 1, 2005. And all of this is moving forward notwithstanding the fact that EPA expressly declined to promulgate more stringent RFG air toxics controls in 1994 on the basis that the benefits could be achieved at a much lower cost by controlling air toxics emissions through other EPA programs. 59 Fed. Reg. 7755-56.

Rather than create a new and more complex program to maintain the air toxic emission reduction benefits of the RFG program, which could add to the boutique fuels problem and exacerbate the gasoline supply situation, Congress should give the new EPA regulations time to work.

#### SECTION 6—ANALYSIS OF MOTOR VEHICLE FUEL CHANGES

Section 6 is greatly reduced from the Section 9 in the past committee bill on this subject, S. 2962. While I am glad that the committee has addressed the concern raised previously that no predicate had been laid for additional EPA automotive authority, it is plain that Section 6 is not particularly well-designed. For example, under Section 3 of the bill, adverse air quality consequences flowing from the ban on MTBE would begin virtually immediately (and in no event later than four years from the date of enactment). However, not until four years after the date of enactment does Section 6 require even a draft analysis of impact, to be finalized a year after that. Only then would modeling changes be contemplated. In effect, the cow Section 6 seeks will be well out of the barn before Section 6 could possibly be effective.

#### SECTION 7—ELIMINATION OF THE 1-PSI RVP WAIVER FOR ETHANOL BLENDS OF CONVENTIONAL GASOLINE

The provision, which would eliminate the 1-psi RVP waiver for ethanol blends of conventional gasoline, is likely to have an adverse impact on conventional gasoline supply and cost. Without the 1-psi waiver, the cost to manufacture the appropriate blendstock for ethanol blending would increase. Many ethanol blenders blend ethanol directly with regular gasoline. This process would no longer be allowed and a special low RVP blendstock for ethanol blending would have to be produced and moved through the distribution system, which is likely to increase supply problems. The net result is likely to be a reduction in ethanol blending in gasoline and therefore a reduction in Midwest total gasoline supply. This is not appropriate given the recent tightness in gasoline supply.

## SECTION 8—ADDITIONAL OPT-IN AREAS UNDER THE RFG PROGRAM

This provision would allow for expansion of the RFG program to any area of the country. This section provides no consideration of the impact of such an expansion on the gasoline distribution system, or the overall costs of the RFG program. Congress debated at great length the geographic scope of the RFG program in the 1990 Clean Air Act Amendments and rejected a national RFG program based on need, supply, and cost. These same factors apply to an even greater extent today as refining capability has been and will continue to be further constrained in light of numerous fuels regulations industry must comply with in a short time frame, such as the recently promulgated gasoline and diesel sulfur rules, and the mobile source air toxics rule. There is no justification to expand the scope of the RFG program.

## SECTION 9B—MTBE MERCHANT PRODUCER CONVERSION ASSISTANCE

I commend the committee for recognizing in this provision that MTBE producers answered the explicit call of Federal requirement for oxygenates when they manufactured and marketed their product. As I have suggested at the mark up held on similar legislation in the last Congress (S. 2962), users and producers of MTBE are deserving of liability protection for the same reason that conversion assistance is also justified: the government required the use of products like MTBE; the government must hold harmless those that answered the call of its mandate. Essentially, we should bear in mind that: (1) MTBE is widely used because of a Federal mandate, the oxygenate standard; (2) MTBE has been effective in addressing the energy and environmental concerns that lay at the heart of a larger Federal program requiring the use of RFG; (3) the government, as a result of the first two points, bears great responsibility for any attendant MTBE liability; and (4) failure to address MTBE liability may undermine any incentive for additive manufacturers to produce new generations of additives that will be needed to replace MTBE and to meet future energy and environmental goals.

In Congress, we have considered liability protections in a variety of settings, including medical care, firefighter assistance, educational institutions, firearms, nuclear energy, and many other areas. The point is that liability protection makes sense when we are seeking to protect a greater principle, such as sound public policy or fairness. Both justifications are present in the current case, and lay at the heart of the judgment the committee made with respect to conversion assistance.

The conversion assistance program itself is an important element to the bill. It reflects the solemn commitment that the bill's primary author made to Senators on the committee. Not only is the provision fair; it is vital if we are to expect companies to respond to future demands for clean fuel additives. I commend the committee for adopting Section 9, but advise vigilance to make sure that adequate funds are appropriated to satisfy Section 9's authorization.

## ENDNOTES

<sup>1</sup>National Defense Council Foundation, *The Growing Refining Gap, A Threat to National Security*. vi (Apr. 29, 1994).

<sup>2</sup>Bob Card, Undersecretary of Energy, Hearings before the Senate Committee on Energy and Natural Resources, June 21, 2001.

<sup>3</sup>Id.

<sup>4</sup>David Pimental, *The Limits of Biomass Utilization*, August 16, 2001 at 9.

<sup>5</sup>Pimental at 10 (“When investigators ignore some of the energy inputs in biomass production and processing they reach an incomplete and deficient analysis for ethanol production. In a recent USDA report (Shapouri et al., 1995), no energy inputs were listed for machinery, irrigation, or for transportation. All of these are major energy input costs in U.S. corn production (Table 3). Another way of reducing the energy inputs for ethanol production is to arbitrarily select lower production costs for the inputs. For instance, Shapouri et al. (1995) list the cost of a kilogram of nitrogen production at 12,000 kcal/kg, considerably lower than FAO which list the cost of nitrogen production at 18,590 kcal per kg. Using the lower figure reduces the energy inputs in corn production by about 50 percent. Other workers have used a similar approach to that of Shapouri et al. (1995).”).

<sup>6</sup>Id.

<sup>7</sup>U.S. General Accounting Office, *Tax Policy: Effects of the Alcohol Fuels Tax Incentive*, March 6, 1997.

<sup>8</sup>Blake Early, *Sierra Club Testimony Before the Senate Committee on Environment and Public Works*, at Congressional Record, Aug. 3, 1994, at S10472 (“As my testimony points out, even the EPA’s initial analysis of the program failed to establish that mandated renewable oxygenate use would result in a net reduction of global warming gases. In proposing the renewable oxygen program, EPA claimed DOE support for its assertion that the renewable oxygen program ‘would reduce foreign oil imports, \* \* \* reduce fossil energy use, and lower emissions of harmful greenhouse gases. The DOE has now challenged these EPA claims and recently released a report from Argonne National Laboratories showing that the renewable oxygenate requirement is more likely to increase—not reduce—foreign oil imports, fossil energy use, and global greenhouse gas emissions.”).

<sup>9</sup>See Chris Bowman, “Through Tahoe’s Murk, Officials Look at ‘Crisis:’ Leaders Briefed on Cleanup Strategies,” *Sacramento Bee*, August 5, 2000.

## MINORITY VIEWS OF SENATOR GEORGE V. VOINOVICH

*Introduction*

The Clean Air Act Amendments of 1990 require the mixing of an oxygenate with gasoline in an effort to reduce vehicle and toxic emissions. However, the most common oxygenate, methyl tertiary butyl ether (MTBE), has been found to contaminate groundwater. MTBE, primarily made from natural gas or petroleum products, is listed as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act of 1990 (CERCLA), but has not been listed as a carcinogen by either the National Institute of Environmental Health Sciences or the International Agency on Research on Cancer.

Last year, this Committee responded to the issues and serious health concerns raised by using MTBE by marking up a bill that banned MTBE. That legislation created an ethanol requirement aimed at ensuring that the MTBE could be replaced and our domestic fuel supply would grow by encouraging the use of ethanol. This legislation however, does not encourage ethanol. In fact, it removes the incentive to use ethanol by removing the oxygenate mandate. Further, it discourages its use by removing the ethanol vapor pressure waiver thus making it harder to blend ethanol.

While I support banning MTBE, I am concerned about certain clean air regulations that would result in the reduced use of ethanol. Oxygenated fuels that use additives such as ethanol have been found to reduce carbon monoxide emissions from automobile exhaust by fourteen percent. Additionally, because ethanol and other additives typically make up about ten percent of one gallon of gasoline, eliminating them would require the country to use an additional five hundred thousand to one million barrels of gasoline per day. This amounts to approximately six to twelve percent of our total daily domestic supply.

Although it is generally more expensive, there are several advantages to using ethanol over MTBE. Primarily, since it is an agricultural product, ethanol is a renewable energy source that helps to address our nation's energy concerns. In addition, ethanol is readily biodegradable, thereby eliminating some of the potential concerns about groundwater contamination that have been associated with MTBE.

According to the U.S. Department of Energy, there are four provisions in S. 950 that create problems directly related to gas supply in this country. The effects of which will be felt greatest and primarily in the Northeast regions of the U.S.

*National MTBE Ban in 4 Years*

The DOE analysis states that the MTBE ban would create economic problems in the Northeast by eliminating nearly three hundred thousand barrels per day (depending on how California is viewed) of what is arguably the highest quality gasoline blend stock. Also, the ban would limit refiners' ability to bring additional blend stock material, such as light straight run and raffinate, into the general gasoline pool.

Presumably, this ban would reduce the supply of reformulated gasoline (RFG) because blending clean gas will become more difficult. In addition to this, the ban will decrease the amount of gaso-

line available for import from Europe because most of this gasoline contains MTBE and is sent to northeastern markets.

Additionally, in light of the 2002 toxic anti-backsliding rule that EPA put into effect this year, any loss of or limitation on additional use of MTBE (or other ethers) will severely limit refiners' ability to make incremental barrels of RFG or other Aclean gasolines. Refiners have had meetings with DOE and EPA in which this combined effect of the toxics rule and MTBE limitations have been clarified. Therefore, S. 950 will impose additional limitations on RFG supply capability.

Overall, DOE estimates the total impact of this provision is over four hundred thousand barrels per day of lost gasoline volume, most of which is concentrated in the east and more so in the north-east.

#### *Removal of Ethanol Vapor Pressure (RVP) Waiver*

This bill eliminates the Vapor Pressure waiver for ethanol. In order to meet the new vapor pressure, some gasoline components will need to be removed. This will inevitably result in an immediate loss of nearly 20 thousand barrels per day with this number increasing if there is a renewable mandate. If an ethanol mandate is added later on the floor, and this provision remains, the loss would catapult to nearly 80 thousand barrels a day. Therefore, instead of getting 100% of ethanol produced gasoline, some of the gasoline components will need to be removed thereby reducing the overall amount of gasoline produced.

In the 2003/2004 time frame, ethanol will be blended into at least 1 million barrels per day of conventional gasoline (where this waiver applies). With a renewable mandate this volume will increase in later years. The loss of the waiver will result in at least a 2% volume loss (lighter gasoline components will have to be removed to accommodate the high RVP ethanol) on each gallon of gasoline with ethanol.

If a renewable mandate (RFS) is imposed as is almost certain, in order to obtain passage of the RFG oxygenate waiver in S. 950, the volume of ethanol used could increase by at least 4 billion gallons and the volume of gasoline (presumably conventional) affected would expand to nearly four million barrels per day. However, the volume loss associated with this would be on the order of nearly .8 million barrels per day. As noted, much of this loss will be concentrated in the mid-west gasoline market where ethanol is currently blended into conventional gasoline. This is a gasoline market that is already short in capacity.

#### *The Additional Gasoline Toxics Controls*

This bill calls for a complicated program of additional gasoline toxics control based on PADD level average baseline performance, applicable only to those states that request a waiver of the RFG oxygenate requirement. Presumably, this would be most or all of the RFG states, leaving marginal gasoline suppliers (those with poorer gasoline toxics performance) with less competitive markets and less total supply access. In times like these where there is severe market imbalance, the ultimate result will be higher and more volatile prices.

The toxics language is based on regional averages. The result will be an undetermined number of Amarginal@ or mostly smaller refiners going out of business. Additionally, the EPA=s new toxics rule for gasoline proposed this year decreases the methods available to reduce the toxics and produce RFG at the same time. This legislation makes it even more difficult since MTBE would have been the toxic reduction mechanism of choice. The banning of MTBE will therefore cause production losses of 1-4% for refineries making reformulated gasoline.

*The State Oxygenate Waiver Option*

This provision has no effect on gasoline volume, in and of itself, beyond those already noted. However, it does introduce other grades of (boutique) fuels into the system. Over the last few years boutique fuels have caused most if not all of our supply problems and price spikes. Under this bill, this problem will worsen the gasoline supply situation, just as individual state RFG toxic requirements do whenever there is a supply upset. This will further limit supply options when there are refinery or pipeline problems.

SUMMARY

This legislation and the state actions that it encourages will no doubt reduce U.S. gasoline supply capability, during the critical summer high gasoline demand months. This decrease will amount to a loss of at least .5 million barrels per day of gasoline blendstock availability. There will be an additional loss of imported gasoline supply due to the tighter toxic standards, bans on MTBE and requirements for sub-RVP blendstocks for ethanol blending.

To place things in proper perspective, currently, the U.S. uses approximately 8.5 million barrels of gasoline per day. Imported gasoline accounts for 3 to 4 million barrels per day of U.S. supply. Essentially all of the imported gasoline is shipped to the East Coast markets. A reduction of .5 million barrels per day is equal to a 6% reduction of total U.S. daily gasoline supply. By banning MTBE and not encouraging the growth of ethanol, S. 950 ignores the fuel needs of the Northeast, which would be most directly affected by this legislation. The result would be crippling gasoline shortages and price hikes.

Ethanol ensures a replacement for MTBE, while increasing our domestic fuel supply. Ethanol is good for the environment. It is an oxygenate which promotes cleaner air, and reduces the amount of carbon monoxide, a poison. Earlier this year, the Auto Alliance reported to the California Air Resources Board that a recent study found that ethanol has a measurable impact on air quality in even the newest, cleanest and most efficient cars and fuels.

S. 950, however, does not encourage the use of ethanol and eliminates the incentive to use it by removing the oxygenate mandate. Additionally, the bill discourages ethanol use by removing the ethanol vapor pressure waiver, which would make it harder to blend ethanol. Although some environmentalists may complain about a potential increase in volatile organic compounds (VOCs) caused by ethanol, the EPA has studied this issue and asserts that any increase in VOC emissions caused by ethanol will be offset by the reductions in carbon monoxide.

The analysis conducted by the Department of Energy found that S. 950 would reduce our gasoline supply anywhere between .5 and one million barrels per day, or six to twelve percent. As a nation, we have reached a point where we should be encouraging the growth of our domestic ethanol production, if for no other reason than to displace the amount of oil we import from the Middle East and other countries.

As we seek to resolve our current national energy crisis and preserve the environment for the many generations to follow, we must do so without compromising our domestic fuel supply. It is obvious that the effects of this legislation will potentially leave the U.S. at the mercy of foreign oil producing countries, while ignoring our own ability to produce clean, domestic gasoline for ourselves.

## CHANGES IN EXISTING LAW

In compliance with section 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill as reported are shown as follows: Existing law proposed to be omitted is enclosed in [black brackets], new matter is printed in *italic*, existing law in which no change is proposed is shown in roman:

**CLEAN AIR ACT<sup>1</sup>**

[As Amended Through P.L. 106-55, August 17, 1999]

## PART A—AIR QUALITY AND EMISSION LIMITATIONS

## FINDINGS AND PURPOSES

SEC. 101. (a) The Congress finds—

\* \* \* \* \*

## REGULATION OF FUELS

SEC. 211. (a) \* \* \*

\* \* \* \* \*

(b)(1) For the purpose of registration of fuels and fuel additives, the Administrator shall require—

(A) the manufacturer of any fuel to notify him as to the commercial identifying name and manufacturer of any additive contained in such fuel; the range of concentration of any additive in the fuel; and the purpose-in-use of any such additive; and

(B) the manufacturer of any additive to notify him as to the chemical composition of such additive.

(2) For the purpose of registration of fuels and fuel additives, the Administrator [may also] *shall, on a regular basis* require the manufacturer of any fuel or fuel additive—

[(A) to conduct tests to determine potential public health effects of such fuel or additive (including, but not limited to, carcinogenic, teratogenic, or mutagenic effects), and]

*(A) to conduct tests to determine potential public health and environmental effects of the fuel or additive (including carcinogenic, teratogenic, or mutagenic effects); and*

(B) to furnish the description of any analytical technique that can be used to detect and measure any additive in such fuel, the recommended range of concentration of such additive, and the recommended purpose-in-use of such additive, and such other information as is reasonable and necessary to determine the emissions resulting from the use of the fuel or additive contained in such fuel, the effect of such fuel or additive on the emission control performance of any vehicle, vehicle engine, nonroad engine or nonroad vehicle, or the extent to which such emissions affect the public health or welfare.

Tests under subparagraph (A) shall be conducted in conformity with test procedures and protocols established by the Adminis-

<sup>1</sup>The Clean Air Act (42 U.S.C. 7401-7626) consists of Public Law 159 (July 14, 1955; 69 Stat. 322) and the amendments made by subsequent enactments.

trator. The results of such tests shall not be considered confidential.

(3) Upon compliance with the provisions of this subsection, including assurances that the Administrator will receive changes in the information required, the Administrator shall register such fuel or fuel additive.

(4) *ETHYL TERTIARY BUTYL ETHER.*—

(A) *IN GENERAL.*—*Not later than 2 years after the date of enactment of this paragraph, the Administrator shall—*

*(i) conduct a study on the effects on public health, air quality, and water resources of increased use of, and the feasibility of using as substitutes for methyl tertiary butyl ether in gasoline—*

*(I) ethyl tertiary butyl ether; and*

*(II) other ethers, as determined by the Administrator; and*

*(ii) submit to the Committee on Energy and Commerce of the House of Representatives and the Committee on Environment and Public Works of the Senate a report describing the results of the study.*

(B) *CONTRACTS FOR STUDY.*—*In carrying out this paragraph, the Administrator may enter into 1 or more contracts with nongovernmental entities.*

(c)(1) The Administrator may, from time to time on the basis of information obtained under subsection (b) of this section or other information available to him, by regulation, control or prohibit the manufacture, introduction into commerce, offering for sale, or sale of any fuel or fuel additive for use in a motor vehicle, motor vehicle engine, or nonroad engine or nonroad vehicle (A) if in the judgment of the Administrator any *fuel or fuel additive or emission product* of such fuel or fuel additive causes, or contributes, to **air pollution which** *air pollution, or water pollution, that* may reasonably be anticipated to endanger the public health or welfare, or (B) if emission products of such fuel or fuel additive will impair to a significant degree the performance of any emission control device or system which is in general use, or which the Administrator finds has been developed to a point where in a reasonable time it would be in general use were such regulation to be promulgated.

(2)(A) No fuel, class of fuels, or fuel additive may be controlled or prohibited by the Administrator pursuant to clause (A) of paragraph (1) except after consideration of all relevant medical and scientific evidence available to him, including consideration of other technologically or economically feasible means of achieving emission standards under section 202.

(B) No fuel or fuel additive may be controlled or prohibited by the Administrator pursuant to clause (B) of paragraph (1) except after consideration of available scientific and economic data, including a cost benefit analysis comparing emission control devices or systems which are or will be in general use and require the proposed control or prohibition with emission control devices or systems which are or will be in general use and do not require the proposed control or prohibition. On request of a manufacturer of motor vehicles, motor vehicle engines, fuels, or fuel additives submitted within 10 days of notice of proposed rulemaking, the Administrator shall hold a public hearing and publish findings with re-

spect to any matter he is required to consider under this subparagraph. Such findings shall be published at the time of promulgation of final regulations.

(C) No fuel or fuel additive may be prohibited by the Administrator under paragraph (1) unless he finds, and publishes such finding, that in his judgment such prohibition will not cause the use of any other fuel or fuel additive which will produce emissions which will endanger the public health or welfare to the same or greater degree than the use of the fuel or fuel additive proposed to be prohibited.

(3)(A) For the purpose of obtaining evidence and data to carry out paragraph (2), the Administrator may require the manufacturer of any motor vehicle or motor vehicle engine to furnish any information which has been developed concerning the emissions from motor vehicles resulting from the use of any fuel or fuel additive, or the effect of such use on the performance of any emission control device or system.

(B) In obtaining information under subparagraph (A), section 307 (a) (relating to subpoenas) shall be applicable.

(4)(A) Except as otherwise provided in subparagraph (B) or (C), no State (or political subdivision thereof) may prescribe or attempt to enforce, for the purposes of motor vehicle emission control, any control or prohibition respecting any characteristic or component of a fuel or fuel additive in a motor vehicle or motor vehicle engine—

(i) if the Administrator has found that no control or prohibition of the characteristic or component of a fuel or fuel additive under paragraph (1) is necessary and has published his finding in the Federal Register, or

(ii) if the Administrator has prescribed under paragraph (1) a control or prohibition applicable to such characteristic or component of a fuel or fuel additive, unless State prohibition or control is identical to the prohibition or control prescribed by the Administrator.

(B) Any State for which application of section 209(a) has at any time been waived under section 209(b) may at any time prescribe and enforce, for the purpose of motor vehicle emission control or *water quality protection*, a control or prohibition respecting any fuel or fuel additive.

(C) A State may prescribe and enforce, for purposes of motor vehicle emission control, a control or prohibition respecting the use of a fuel or fuel additive in a motor vehicle or motor vehicle engine if an applicable implementation plan for such State under section 110 so provides. The Administrator may approve such provision in an implementation plan, or promulgate an implementation plan containing such a provision, only if he finds that the State control or prohibition is necessary to achieve the national primary or secondary ambient air quality standard which the plan implements. The Administrator may find that a State control or prohibition is necessary to achieve that standard if no other measures that would bring about timely attainment exist, or if other measures exist and are technically possible to implement, but are unreasonable or impracticable. The Administrator may make a finding of necessity under this subparagraph even if the plan for the area does not contain an approved demonstration of timely attainment.

(5) *BAN ON THE USE OF MTBE.*—Not later than 4 years after the date of enactment of this paragraph, the Administrator shall ban use of methyl tertiary butyl ether in motor vehicle fuel.

(6) *MTBE MERCHANT PRODUCER CONVERSION ASSISTANCE.*—

(A) *IN GENERAL.*—The Administrator may make grants to merchant producers of methyl tertiary butyl ether in the United States to assist the producers in the conversion of eligible production facilities described in subparagraph (B) to the production of other fuel additives that—

(i) will be consumed in nonattainment areas;

(ii) will assist the nonattainment areas in achieving attainment with a national primary ambient air quality standard;

(iii) will not degrade air quality or surface or ground water quality or resources; and

(iv) have been registered and tested in accordance with the requirements of this section.

(B) *ELIGIBLE PRODUCTION FACILITIES.*—A production facility shall be eligible to receive a grant under this paragraph if the production facility—

(i) is located in the United States; and

(ii) produced methyl tertiary butyl ether for consumption in nonattainment areas during the period—

(I) beginning on the date of enactment of this paragraph; and

(II) ending on the effective date of the ban on the use of methyl tertiary butyl ether under paragraph (5).

(C) *AUTHORIZATION OF APPROPRIATIONS.*—There is authorized to be appropriated to carry out this paragraph \$250,000,000 for each of fiscal years 2002 through 2004.

(d) *PENALTIES AND INJUNCTIONS.*—

(1) *CIVIL PENALTIES.*—Any person who violates subsection (a), (f), (g), (k), (l), (m), or (n) of this section or the regulations prescribed under subsection (c), (h), (i), (k), (l), (m), [or (n)] (n), or (o) of this section or who fails to furnish any information or conduct any tests required by the Administrator under subsection (b) of this section shall be liable to the United States for a civil penalty of not more than the sum of \$25,000 for every day of such violation and the amount of economic benefit or savings resulting from the violation. Any violation with respect to a regulation prescribed under subsection (c), (k), (l), [or (m)] (m), or (o) of this section which establishes a regulatory standard based upon a multiday averaging period shall constitute a separate day of violation for each and every day in the averaging period. Civil penalties shall be assessed in accordance with subsections (b) and (c) of section 205.

(2) *INJUNCTIVE AUTHORITY.*—The district courts of the United States shall have jurisdiction to restrain violations of subsections (a), (f), (g), (k), (l), (m), and (n) of this section and of the regulations prescribed under subsections (c), (h), (i), (k), (l), (m), [and (n)] (n), and (o) of this section, to award other appropriate relief, and to compel the furnishing of information and the conduct of tests required by the Administrator under subsection (b) of this section. Actions to restrain such violations and compel such actions shall be brought by and in the

name of the United States. In any such action, subpoenas for witnesses who are required to attend a district court in any district may run into any other district.

\* \* \* \* \*

(h) REID VAPOR PRESSURE REQUIREMENTS.—

(1) PROHIBITION.—Not later than 6 months after the date of the enactment of the Clean Air Act Amendments of 1990, the Administrator shall promulgate regulations making it unlawful for any person during the high ozone season (as defined by the Administrator) to sell, offer for sale, dispense, supply, offer for supply, transport, or introduce into commerce gasoline with a Reid Vapor Pressure in excess of 9.0 pounds per square inch (psi). Such regulations shall also establish more stringent Reid Vapor Pressure standards in a nonattainment area as the Administrator finds necessary to generally achieve comparable evaporative emissions (on a per-vehicle basis) in nonattainment areas, taking into consideration the enforceability of such standards, the need of an area for emission control, and economic factors.

(2) ATTAINMENT AREAS.—The regulations under this subsection shall not make it unlawful for any person to sell, offer for supply, transport, or introduce into commerce gasoline with a Reid Vapor Pressure of 9.0 pounds per square inch (psi) or lower in any area designated under section 107 as an attainment area. Notwithstanding the preceding sentence, the Administrator may impose a Reid vapor pressure requirement lower than 9.0 pounds per square inch (psi) in any area, formerly an ozone nonattainment area, which has been redesignated as an attainment area.

(3) EFFECTIVE DATE; ENFORCEMENT.—The regulations under this subsection shall provide that the requirements of this subsection shall take effect not later than the high ozone season for 1992, and shall include such provisions as the Administrator determines are necessary to implement and enforce the requirements of this subsection.

[(4) ETHANOL WAIVER.—For fuel blends containing gasoline and 10 percent denatured anhydrous ethanol, the Reid vapor pressure limitation under this subsection shall be one pound per square inch (psi) greater than the applicable Reid vapor pressure limitations established under paragraph (1); *Provided, however,* That a distributor, blender, marketer, reseller, carrier, retailer, or wholesale purchaser-consumer shall be deemed to be in full compliance with the provisions of this subsection and the regulations promulgated thereunder if it can demonstrate (by showing receipt of a certification or other evidence acceptable to the Administrator) that—

[(A) the gasoline portion of the blend complies with the Reid vapor pressure limitations promulgated pursuant to this subsection;

[(B) the ethanol portion of the blend does not exceed its waiver condition under subsection (f)(4); and

[(C) no additional alcohol or other additive has been added to increase the Reid Vapor Pressure of the ethanol portion of the blend.

[(5)] (4) AREAS COVERED.—The provisions of this subsection shall apply only to the 48 contiguous States and the District of Columbia.

\* \* \* \* \*

(k) REFORMULATED GASOLINE FOR CONVENTIONAL VEHICLES.—

(1) EPA REGULATIONS.—[Within 1 year after the enactment of the Clean Air Act Amendments of 1990]

(A) *IN GENERAL.*—*Not later than November 15, 1991, the Administrator shall promulgate regulations under this section establishing requirements for reformulated gasoline to be used in gasoline-fueled vehicles in specified non-attainment areas. Such regulations shall require the greatest reduction in emissions of ozone forming volatile organic compounds (during the high ozone season) and emissions of toxic air pollutants (during the entire year) achievable through the reformulation of conventional gasoline, taking into consideration the cost of achieving such emission reductions, any nonair-quality and other air-quality related health and environmental impacts and energy requirements.*

(B) *WAIVER OF OXYGEN CONTENT REQUIREMENT.*—

(i) *AUTHORITY OF THE GOVERNOR.*—

(I) *IN GENERAL.*—*Notwithstanding any other provision of this subsection, a Governor of a State, upon notification by the Governor to the Administrator during the 90-day period beginning on the date of enactment of this subparagraph, or during the 90-day period beginning on the date on which an area in the State becomes a covered area by operation of the second sentence of paragraph (10)(D), may waive the application of paragraphs (2)(B) and (3)(A)(v) to gasoline sold or dispensed in the State.*

(II) *OPT-IN AREAS.*—*A Governor of a State that submits an application under paragraph (6) may, as part of that application, waive the application of paragraphs (2)(B) and (3)(A)(v) to gasoline sold or dispensed in the State.*

(ii) *TREATMENT AS REFORMULATED GASOLINE.*—*In the case of a State for which the Governor invokes the waiver described in clause (i), gasoline that complies with all provisions of this subsection other than paragraphs (2)(B) and (3)(A)(v) shall be considered to be reformulated gasoline for the purposes of this subsection.*

(iii) *EFFECTIVE DATE OF WAIVER.*—*A waiver under clause (i) shall take effect on the earlier of—*

(I) *the date on which the performance standard under subparagraph (C) takes effect; or*

(II) *the date that is 270 days after the date of enactment of this subparagraph.*

(C) *MAINTENANCE OF TOXIC AIR POLLUTANT EMISSION AND AROMATIC HYDROCARBON CONTENT REDUCTIONS.*—

(i) *IN GENERAL.*—*As soon as practicable after the date of enactment of this subparagraph, the Administrator shall—*

(I) promulgate regulations consistent with subparagraph (A) and paragraph (3)(B)(ii) to ensure that reductions of toxic air pollutant emissions achieved under the reformulated gasoline program under this section before the date of enactment of this subparagraph are maintained in States for which the Governor waives the oxygenate requirement under subparagraph (B)(i); or

(II) determine that the requirement described in clause (iv)—

(aa) is consistent with the bases for a performance standard described in clause (ii); and

(bb) shall be deemed to be the performance standard under clause (ii) and shall be applied in accordance with clause (iii).

(ii) PADD PERFORMANCE STANDARDS.—The Administrator, in regulations promulgated under clause (i)(I), shall establish annual average performance standards for each Petroleum Administration for Defense District (referred to in this subparagraph as a “PADD”) based on—

(I) the average of the annual aggregate reductions in emissions of toxic air pollutants achieved under the reformulated gasoline program in each PADD during calendar years 1999 and 2000, determined on the basis of the 1999 and 2000 Reformulated Gasoline Survey Data, as collected by the Administrator; and

(II) such other information as the Administrator determines to be appropriate.

(iii) APPLICABILITY.—

(I) IN GENERAL.—The performance standards under this subparagraph shall be applied on an annual average importer or refinery-by-refinery basis to reformulated gasoline that is sold or introduced into commerce in a State for which the Governor waives the oxygenate requirement under subparagraph (B)(i).

(II) MORE STRINGENT REQUIREMENTS.—The performance standards under this subparagraph shall not apply to the extent that any requirement under section 202(l) is more stringent than the performance standards.

(III) STATE STANDARDS.—The performance standards under this subparagraph shall not apply in any State that has received a waiver under section 209(b).

(IV) CREDIT PROGRAM.—The Administrator shall provide for the granting of credits for exceeding the performance standards under this subparagraph in the same manner as provided in paragraph (7).

(iv) STATUTORY PERFORMANCE STANDARDS.—

(I) *IN GENERAL.*—Subject to subclause (IV), if the regulations under clause (i)(I) have not been promulgated by the date that is 270 days after the date of enactment of this subparagraph, the requirement described in subclause (III) shall be deemed to be the performance standards under clause (ii) and shall be applied in accordance with clause (iii).

(II) *PUBLICATION IN FEDERAL REGISTER.*—Not later than 30 days after the date of enactment of this subparagraph, the Administrator shall publish in the Federal Register, for each PADD, the percentage equal to the average of the annual aggregate reductions in the PADD described in clause (ii)(I).

(III) *TOXIC AIR POLLUTANT EMISSIONS.*—The annual aggregate emissions of toxic air pollutants from baseline vehicles when using reformulated gasoline in each PADD shall be not greater than—

(aa) the aggregate emissions of toxic air pollutants from baseline vehicles when using baseline gasoline in the PADD; reduced by

(bb) the quantity obtained by multiplying the aggregate emissions described in item (aa) for the PADD by the percentage published under subclause (II) for the PADD.

(IV) *SUBSEQUENT REGULATIONS.*—Through promulgation of regulations under clause (i)(I), the Administrator may modify the performance standards established under subclause (I) to require each PADD to achieve a greater percentage reduction than the percentage published under subclause (II) for the PADD.

\* \* \* \* \*

**[(6) OPT-IN AREAS.—(A) Upon]**

**(6) OPT-IN AREAS.—**

**(A) CLASSIFIED AREAS.—**

(i) *IN GENERAL.*—Upon the application of the Governor of a State, the Administrator shall apply the prohibition set forth in paragraph (5) in any area in the State classified under subpart 2 of part D of title I as a Marginal, Moderate, Serious, or Severe Area (without regard to whether or not the 1980 population of the area exceeds 250,000). In any such case, the Administrator shall establish an effective date for such prohibition as he deems appropriate, not later than January 1, 1995, or 1 year after such application is received, whichever is later. The Administrator shall publish such application in the Federal Register upon receipt.

**[(B) If]**

(ii) *EFFECT OF INSUFFICIENT DOMESTIC CAPACITY TO PRODUCE REFORMULATED GASOLINE.*—If the Administrator determines, on the Administrator's own motion or on petition of any person, after consultation

with the Secretary of Energy, that there is insufficient domestic capacity to produce gasoline certified under this subsection, the Administrator shall, by rule, extend the effective date of such prohibition in Marginal, Moderate, Serious, or Severe Areas referred to in **[subparagraph (A)]** *clause (i)* for one additional year, and may, by rule, renew such extension for 2 additional one-year periods. The Administrator shall act on any petition submitted under **[this paragraph]** *this subparagraph* within 6 months after receipt of the petition. The Administrator shall issue such extensions for areas with a lower ozone classification before issuing any such extension for areas with a higher classification.

**(B) NONCLASSIFIED AREAS.**—

*(i) IN GENERAL.*—*In accordance with section 110, a State may submit to the Administrator, and the Administrator may approve, a State implementation plan revision that provides for application of the prohibition specified in paragraph (5) in any portion of the State that is not a covered area or an area referred to in subparagraph (A)(i).*

*(ii) PERIOD OF EFFECTIVENESS.*—*Under clause (i), the State implementation plan shall establish a period of effectiveness for applying the prohibition specified in paragraph (5) to a portion of a State that—*

*(I) commences not later than 1 year after the date of approval by the Administrator of the State implementation plan; and*

*(II) ends not earlier than 4 years after the date of commencement under subclause (I).*

\* \* \* \* \*

**(10) EXCLUSION FROM REID VAPOR PRESSURE REQUIREMENT.**—*Notwithstanding subsection (c)(4)(C), the Administrator may approve a revision of a State implementation plan that excludes an area from a waiver provided under subsection (h)(4) if—*

*(A) the State demonstrates that the increases in volatile organic compound emissions resulting from the waiver significantly interfere with attainment or maintenance of the national ambient air quality standard for ozone; and*

*(B) the Administrator determines that the exclusion is reasonable and practicable.*

**[(10)] (11) DEFINITIONS.**— \* \* \*

\* \* \* \* \*

**(o) ANALYSES OF MOTOR VEHICLE FUEL CHANGES AND EMISSIONS MODEL.**—

**(1) ANTI-BACKSLIDING ANALYSIS.**—

*(A) DRAFT ANALYSIS.*—*Not later than 4 years after the date of enactment of this subsection, the Administrator shall publish for public comment a draft analysis of the changes in emissions of air pollutants and air quality due to the use of motor vehicle fuel and fuel additives resulting*

from implementation of the amendments made by the Federal Reformulated Fuels Act of 2001.

(B) *FINAL ANALYSIS.*—After providing a reasonable opportunity for comment but not later than 5 years after the date of enactment of this subsection, the Administrator shall publish the analysis in final form.

(2) *EMISSIONS MODEL.*—For the purposes of this subsection, as soon as the necessary data are available, the Administrator shall develop and finalize an emissions model that reasonably reflects the effects of fuel characteristics or components on emissions from vehicles in the motor vehicle fleet during calendar year 2005.

[(o)] (p) **FUEL AND FUEL ADDITIVE IMPORTERS AND IMPORTATION.**—For the purposes of this section, the term “manufacturer” includes an importer and the term “manufacture” includes importation.

\* \* \* \* \*

**SOLID WASTE DISPOSAL ACT**<sup>1</sup>

[As Amended Through P.L. 106–55, August 17, 1999]

SEC. 1001. This title (hereinafter in this title referred to as “this Act”), together with the following table of contents, may be cited as the “Solid Waste Disposal Act”:

Subtitle A—General Provisions

Sec. 1001. \* \* \*

\* \* \* \* \*

【Sec. 9010. Authorization of appropriations.  
 Sec. 9010. Release prevention and compliance.  
 Sec. 9011. Authorization of appropriations.

\* \* \* \* \*

DEFINITIONS AND EXEMPTIONS

SEC. 9001. For the purposes of this subtitle—

(1) \* \* \*

\* \* \* \* \*

(3) The term “owner” means—

(A) in the case of an underground storage tank in use on the date of enactment of the Hazardous and Solid Waste Amendments of 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated [sustances] substances,

\* \* \* \* \*

<sup>1</sup>The Solid Waste Disposal Act (42 U.S.C. 6901–6992k) consists of title II of Public Law 89–272 and the amendments made by subsequent enactments. This Act is popularly referred to as the Resource Conservation and Recovery Act, after the short title of the law that amended the Solid Waste Disposal Act in its entirety in 1976 (P.L. 94–580).

## RELEASE DETECTION, PREVENTION, AND CORRECTION REGULATIONS

## SEC. 9003. (a) \* \* \*

\* \* \* \* \*

(f) EFFECTIVE DATES.—(1) Regulations issued pursuant to [subsection (c) and (d) of this section] *subsections (c) and (d)*, and standards issued pursuant to subsection (e) of this section, for underground storage tanks containing regulated substances defined in section 9001(2)(B) (petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure) shall be effective not later than thirty months after the date of enactment of the Hazardous and Solid Waste Amendments of 1984.

\* \* \* \* \*

## (h) EPA RESPONSE PROGRAM FOR PETROLEUM.—

(1) \* \* \*

\* \* \* \* \*

(7) STATE AUTHORITIES.—

(A) GENERAL.—A State may exercise the authorities in [paragraphs (1) and (2) of this subsection] *paragraphs (1), (2), and (12)*, subject to the terms and conditions of paragraphs (3), (5), (9), (10), and (11), and including the authorities of paragraphs (4), (6), and (8) of this subsection *and subsection 9010(a)* if—

\* \* \* \* \*

(12) REMEDIATION OF MTBE CONTAMINATION.—

(A) IN GENERAL.—*The Administrator and the States may use funds made available under section 9011(1) to carry out corrective actions with respect to a release of methyl tertiary butyl ether that presents a threat to human health, welfare, or the environment.*

(B) APPLICABLE AUTHORITY.—*Subparagraph (A) shall be carried out—*

*(i) in accordance with paragraph (2); and*

*(ii) in the case of a State, in accordance with a cooperative agreement entered into by the Administrator and the State under paragraph (7).*

\* \* \* \* \*

## APPROVAL OF STATE PROGRAMS

SEC. 9004. (a) ELEMENTS OF STATE PROGRAM.—Beginning 30 months after the date of enactment of the Hazardous and Solid Waste Amendments of 1984, any State may, submit an underground storage tank release detection, prevention, and correction program for review and approval by the Administrator. The program may cover tanks used to store regulated substances [referred to in 9001(2) (A) or (B) or both. A State program may be approved by the Administrator under this section only if the State demonstrates that the State program includes the following requirements and standards and provides for adequate enforcement of

compliance with such requirements and standards] referred to in subparagraph (A) or (B), or both, of section 9001(2)—

\* \* \* \* \*

#### INSPECTIONS, MONITORING, TESTING, AND CORRECTIVE ACTION

SEC. 9005. (a) FURNISHING INFORMATION.—For the purposes of developing or assisting in the development of any regulation, conducting any [study taking] *study, taking* any corrective action, or enforcing the provisions of this subtitle, any owner or operator of an underground storage tank (or any tank subject to study under section 9009 that is used for storing regulated substances) shall, upon request of any officer, employee or representative of the Environmental Protection Agency, duly designated by the Administrator, or upon request of any duly designated officer, employee, or representative of a State acting pursuant to subsection (h)(7) of section 9003 or with an approved program, furnish information relating to such tanks, their associated equipment, their contents, conduct monitoring or testing, permit such officer at all reasonable times to have access to, and to copy all records relating to such tanks and permit such officer to have access for corrective action. For the purposes of developing or assisting in the development of any regulation, conducting any study, taking corrective action, or enforcing the provisions of this subtitle, such officers, employees, or representatives are authorized—

- (1) to enter at reasonable times any establishment or other place where an underground storage tank is located;
- (2) to inspect and obtain samples from any person of any regulated substances contained in such tank;
- (3) to conduct monitoring or testing of the tanks, associated equipment, contents, or surrounding soils, air, surface water or ground water, and
- (4) to take corrective action.

Each such inspection shall be commenced and completed with reasonable promptness.

(b) CONFIDENTIALITY.—(1) Any records, reports, or information obtained from any persons under this section shall be available to the public, except that upon a showing satisfactory to the Administrator (or the State, as the case may be) by any person that records, reports, or information, or a particular part thereof, to which the Administrator (or the State, as the case may be) or any officer, employee, or representative thereof has access under this section if made public, would divulge information entitled to protection under section 1905 of title 18 of the United States Code, such information or particular portion thereof shall be considered confidential in accordance with the purposes of that section, except that such record, report, document, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this Act, or when [relevant] *relevant* in any proceeding under this Act.

(2) Any person not subject to the provisions of section 1905 of title 18 of the United States Code who knowingly and willfully divulges or discloses any information entitled to protection under this subsection shall, upon conviction, be subject to a fine of not more than \$5,000 or to imprisonment not to exceed one year, or both.

(3) In submitting data under this subtitle, a person required to provide such data may—

(A) designate the data which such person believes is entitled to protection under this subsection, and

(B) submit such designated data separately from other data submitted under this subtitle.

A designation under this paragraph shall be made in writing and in such manner as the Administrator may prescribe.

(4) Notwithstanding any limitation contained in this section or any other provision of law, all information reported to, or otherwise obtained, by the Administrator (or any representative of the Administrator) under this Act shall be made available, upon written request of any duly authorized committee of the Congress, to such committee (including records, reports, or information obtained by representatives of the [Environmental] Environmental Protection Agency).

\* \* \* \* \*

**[AUTHORIZATION OF APPROPRIATIONS**

**[SEC. 9010. For authorization of appropriations to carry out this subtitle, see section 2007(g).]**

**SEC. 9010. RELEASE PREVENTION AND COMPLIANCE.**

*Funds made available under section 9011(2) from the Leaking Underground Storage Tank Trust Fund may be used for conducting inspections, or for issuing orders or bringing actions under this subtitle—*

(1) *by a State (pursuant to section 9003(h)(7)) acting under—*

(A) *a program approved under section 9004; or*

(B) *State requirements regulating underground storage tanks that are similar or identical to this subtitle; and*

(2) *by the Administrator, acting under this subtitle or a State program approved under section 9004.*

**SEC. 9011. AUTHORIZATION OF APPROPRIATIONS.**

*In addition to amounts made available under section 2007(f), there are authorized to be appropriated from the Leaking Underground Storage Tank Trust Fund—*

(1) *to carry out section 9003(h)(12), \$200,000,000 for fiscal year 2001, to remain available until expended; and*

(2) *to carry out section 9010—*

(A) *\$50,000,000 for fiscal year 2002; and*

(B) *\$30,000,000 for each of fiscal years 2003 through 2007.*

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